

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

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

1.1 Product identifier

Trade name : Elan-tech® EC 157

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

Use of the Substance/Mixture : Casting Resin

1.3 Details of the supplier of the safety data sheet

Company : ELANTAS Europe S.r.l.
Strada Antolini 1
43044 Collecchio
Italy
Telephone : +3907363081
Telefax : +390736402746
E-mail address : msds.elantas.europe@altana.com

1.4 Emergency telephone number

+39 0736 3081 (8-17 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :  

Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

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

P273 Avoid release to the environment.

P280 Wear protective gloves/ eye protection/ face protection.

Response:

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

Hazardous components which must be listed on the label:

bis[4-(2,3-epoxypropoxy)phenyl]propane

Bisphenol-F-epichlorohydrin resin, MM=<700

1,6-bis(2,3-epoxypropoxy)hexane

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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Modified epoxy resin

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
bis[4-(2,3-epoxypropoxy)phenyl]propane	1675-54-3 216-823-5 01-2119456619-26	Eye Irrit.2; H319 Skin Irrit.2; H315 Skin Sens.1; H317 Aquatic Chronic2; H411	>= 30 - < 50
Bisphenol-F-epichlorohydrin resin, MM=<700	9003-36-5 01-2119454392-40	Skin Irrit.2; H315 Skin Sens.1A; H317 Aquatic Chronic2; H411	>= 30 - < 50
1,6-bis(2,3-epoxypropoxy)hexane	933999-84-9 240-260-4 01-2119463471-41	Skin Irrit.2; H315 Eye Irrit.2; H319 Skin Sens.1; H317	>= 20 - < 25

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

		Aquatic Chronic3; H412	
propylene carbonate	108-32-7 203-572-1 /	Eye Irrit.2; H319	>= 1 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Keep warm and in a quiet place.
 Show this safety data sheet to the doctor in attendance.
 Take off all contaminated clothing immediately.

- If inhaled : Move to fresh air.
 Keep patient warm and at rest.
 If unconscious, place in recovery position and seek medical advice.
 If symptoms persist, call a physician.
 If breathing is irregular or stopped, administer artificial respiration.

- In case of skin contact : Wash off immediately with soap and plenty of water.
 Do NOT use solvents or thinners.
 If on clothes, remove clothes.
 If skin irritation persists, call a physician.

- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,
 for at least 15 minutes.
 If eye irritation persists, consult a specialist.
 If easy to do, remove contact lens, if worn.

- If swallowed : Keep at rest.
 Do not induce vomiting without medical advice.
 Keep respiratory tract clear.
 If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : irritant effects
 Redness
 sensitising effects

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : The first aid procedure should be established in consultation
 with the doctor responsible for industrial medicine.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Foam
Sand
Carbon dioxide (CO₂)
Water mist

Unsuitable extinguishing media : Water spray jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : The pressure in sealed containers can increase under the influence of heat.
Cool closed containers exposed to fire with water spray.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : In the event of fire and/or explosion do not breathe fumes.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Immediately evacuate personnel to safe areas.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
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 : Refer to protective measures listed in sections 7 and 8.
Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains.

6.2 Environmental precautions

Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
Try to prevent the material from entering drains or water courses.
Local authorities should be advised if significant spillages cannot be contained.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Pick up and transfer to properly labelled containers.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms. Avoid inhalation, ingestion and contact with skin and eyes. Wear personal protective equipment. Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition.
- Hygiene measures : Provide adequate ventilation. Wash hands and face before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers.
- Advice on common storage : Keep away from oxidizing agents, strongly acid or alkaline materials and amines.
Keep product and empty container away from heat and sources of ignition.
Keep away from food and drink.
- Other data : Stable at normal ambient temperature and pressure.

7.3 Specific end use(s)

- Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

bis[4-(2,3-epoxypropoxy)phenyl]propane	: End Use: Workers
	Exposure routes: Skin contact
	Potential health effects: Acute systemic effects, Long-term systemic effects
	Value: 8,33 mg/kg
	End Use: Workers
	Exposure routes: Inhalation
	Potential health effects: Acute systemic effects, Long-term local effects
	Value: 12,25 mg/m ³
	End Use: Consumers
	Exposure routes: Skin contact
	Potential health effects: Acute systemic effects, Long-term systemic effects
	Value: 3,571 mg/kg
	End Use: Consumers
	Exposure routes: Ingestion
	Potential health effects: Acute systemic effects, Long-term systemic effects
	Value: 0,75 mg/kg
1,6-bis(2,3-epoxypropoxy)hexane	: End Use: Workers
	Exposure routes: Skin contact
	Potential health effects: Long-term systemic effects
	Value: 2,8 mg/kg
	End Use: Workers
	Exposure routes: Inhalation
	Potential health effects: Long-term systemic effects
	Value: 4,9 mg/m ³

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

bis[4-(2,3-epoxypropoxy)phenyl]propane	: Fresh water
	Value: 0,006 mg/l
	Marine water
	Value: 0,0006 mg/l
	Intermittent releases
	Value: 0,018 mg/l
	Sewage treatment plant
	Value: 10 mg/l
	Fresh water sediment
	Value: 0,996 mg/kg
1,6-bis(2,3-epoxypropoxy)hexane	Marine sediment
	Value: 0,0996 mg/kg
	Soil
	Value: 0,196 mg/kg
	: Sewage treatment plant
	Value: 1 mg/l
	Fresh water

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Value: 0,0115 mg/l
Fresh water sediment
Value: 0,283 mg/kg
Marine water
Value: 0,00115 mg/l
Marine sediment
Value: 0,0283 mg/kg
Soil
Value: 0,223 mg/kg

8.2 Exposure controls

Engineering measures

Effective exhaust ventilation system
effective ventilation in all processing areas

Personal protective equipment

- Eye protection : Do not wear contact lenses.
Safety glasses with side-shields conforming to EN166
Ensure that eyewash stations and safety showers are close to the workstation location.
- Hand protection
Material : Protective gloves complying with EN 374.
- Skin and body protection : Protective suit
- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. In the case of vapour formation use a respirator with an approved filter.
Respirator with a vapour filter (EN 141)
Apply technical measures to comply with the occupational exposure limits.
This should be achieved by a good general extraction and -if practically feasible- by the use of a local exhaust ventilation.
- Protective measures : Avoid contact with skin.
Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance : liquid
- Colour : light yellow
- Odour : slight
- Odour Threshold : not determined
- pH : not determined

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Melting point/freezing point	: Not applicable
Boiling point/boiling range	: > 200 °C
Flash point	: 140 °C
Evaporation rate	: not determined
Upper explosion limit	: Not applicable
Lower explosion limit	: Not applicable
Vapour pressure	: Not applicable
Relative vapour density	: not determined
Density	: 1,15 g/cm ³ (25 °C)
Bulk density	: not determined
Solubility(ies)	
Solubility in other solvents	: not determined
Partition coefficient: n-octanol/water	: No data available
Ignition temperature	: Not applicable
Auto-ignition temperature	: Not applicable
Thermal decomposition	: Method: No data available
Viscosity	
Viscosity, dynamic	: 500 - 600 mPa.s (25 °C)
Viscosity, kinematic	: not determined
Explosive properties	: Not applicable
Oxidizing properties	: Not applicable

9.2 Other information

Surface tension	: not determined
Sublimation point	: Not applicable

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with the following substances:
Bases
Strong oxidizing agents
Avoid amines.

10.4 Conditions to avoid

Conditions to avoid : No decomposition if used as directed.

10.5 Incompatible materials

Materials to avoid : Incompatible with oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products : This product may release the following:
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Components:

|| bis[4-(2,3-epoxypropoxy)phenyl]propane:

Acute oral toxicity : LD50 (Rat, female): > 2.000 mg/kg
Method: OECD Test Guideline 420
GLP: yes

Acute dermal toxicity : LD50 (Rat, male and female): > 2.000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

|| 1,6-bis(2,3-epoxypropoxy)hexane:

Acute oral toxicity : LD50 (Rat): 2.900 mg/kg
Method: OECD Test Guideline 401
GLP: yes

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Acute dermal toxicity : LD50 (Rabbit): > 2.000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

|| bis[4-(2,3-epoxypropoxy)phenyl]propane:

Species: Rabbit
Exposure time: 4 h
Method: OECD Test Guideline 404
Result: Skin irritation
GLP: yes

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

|| bis[4-(2,3-epoxypropoxy)phenyl]propane:

Test Type: Mouse Local Lymph Node assay (LLNA)
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
GLP: yes

|| 1,6-bis(2,3-epoxypropoxy)hexane:

Test Type: Mouse Local Lymph Node assay (LLNA)
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
GLP: yes

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - single exposure

Product:

Remarks: Not applicable

STOT - repeated exposure

Repeated dose toxicity

Product:

Remarks: No data available

Aspiration toxicity

Components:

|| bis[4-(2,3-epoxypropoxy)phenyl]propane:

No aspiration toxicity classification

Further information

Product:

Remarks: No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Components:

|| bis[4-(2,3-epoxypropoxy)phenyl]propane:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): 1,7 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,3 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes

1,6-bis(2,3-epoxypropoxy)hexane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 30 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Components:

bis[4-(2,3-epoxypropoxy)phenyl]propane:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301F
GLP: yes

1,6-bis(2,3-epoxypropoxy)hexane:

Biodegradability : Test Type: aerobic
Result: Inherently biodegradable.
Method: OECD Test Guideline 301D
GLP: yes

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Components:

bis[4-(2,3-epoxypropoxy)phenyl]propane:

Partition coefficient: n-octanol/water : log Pow: 3,242 (25 °C)
pH: 7,1
Method: OECD Test Guideline 117
GLP: yes

1,6-bis(2,3-epoxypropoxy)hexane:

Partition coefficient: n-octanol/water : log Pow: 0,822 (20 °C)
pH: 6 - 8
Method: OECD Test Guideline 107
GLP: yes

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

12.4 Mobility in soil

Components:

1,6-bis(2,3-epoxypropoxy)hexane:

Distribution among environmental compartments : log Koc: 2,98
Method: OECD Test Guideline 121

12.5 Results of PBT and vPvB assessment

Product:

Assessment : 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..

12.6 Other adverse effects

Product:

Additional ecological information : Remarks: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : In accordance with local and national regulations.
Container hazardous when empty.
Do not dispose of with domestic refuse.
Do not mix waste streams during collection.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

14.1 UN number

ADR/RID/ADN : UN 3082

IMDG : UN 3082

IATA : UN 3082

14.2 UN proper shipping name

ADR/RID/ADN : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(bis[4-(2,3-epoxypropoxy)phenyl]propane)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

IATA : (bis[4-(2,3-epoxypropoxy)phenyl]propane)
: Environmentally hazardous substance, liquid, n.o.s.
(bis[4-(2,3-epoxypropoxy)phenyl]propane)

14.3 Transport hazard class(es)

ADR/RID/ADN : 9
IMDG : 9
IATA : 9

14.4 Packing group

ADR/RID/ADN
Packing group : III
Classification Code : M6
Hazard Identification Number : 90
Labels : 9
Remarks :

IMDG
Packing group : III
Labels : 9
EmS Code : F-A, S-F

IATA
Packing instruction (cargo aircraft) : 964
Packing instruction (passenger aircraft) : 964
Packing group : III
Labels : 9

14.5 Environmental hazards

ADR/RID/ADN
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

IATA
Environmentally hazardous : yes

14.6 Special precautions for user

Remarks : The transport of dangerous goods, including their loading and unloading, must be done by people who received the necessary training required by Modal Regulations.

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

Not applicable for product as supplied.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

		Quantity 1	Quantity 2
E2	ENVIRONMENTAL HAZARDS	200 t	500 t

15.2 Chemical safety assessment

Not applicable

SECTION 16: Other information

Full text of H-Statements

H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H319 : Causes serious eye irritation.
H411 : Toxic to aquatic life with long lasting effects.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Aquatic Chronic : Chronic aquatic toxicity
Eye Irrit. : Eye irritation
Skin Irrit. : Skin irritation
Skin Sens. : Skin sensitisation

Further information

Training advice : Provide adequate information, instruction and training for operators.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Elan-tech® EC 157

Version 4.0 SDB_GB

Revision Date 12.09.2018

Print Date 14.09.2018

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

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

1.1 Product identifier

Trade name : Elan-tech® W 152 MR

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

Use of the Substance/Mixture : Epoxy Hardener

1.3 Details of the supplier of the safety data sheet

Company : ELANTAS Europe S.r.l.
Strada Antolini 1
43044 Collecchio
Italy
Telephone : +3907363081
Telefax : +390736402746
E-mail address : msds.elantas.europe@altana.com

1.4 Emergency telephone number

+39 0736 3081 (8-17 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity , Category 4	H302: Harmful if swallowed.
Skin corrosion , Category 1A	H314: Causes severe skin burns and eye damage.
Skin sensitisation , Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - repeated exposure , Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Chronic aquatic toxicity , Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

Hazard statements	:	H302 H314 H317 H373 H411	Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects.
Precautionary statements	:	Prevention: P260 P273 P280 Response: P303 + P361 + P353 P305 + P351 + P338 P310	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Avoid release to the environment. Wear protective gloves/ protective clothing/ eye protection/ face protection. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. 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.

Hazardous components which must be listed on the label:
 4,4'-methylenebis(cyclohexylamine)

3-aminomethyl-3,5,5-trimethylcyclohexylamine



Signal word	:	Danger	
Hazard statements	:	H302 H314 H317 H373 H411	Harmful if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects.
Precautionary statements	:	P260 P273 P280 P303 + P361 + P353 P305 + P351 + P338	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. Avoid release to the environment. Wear protective gloves/ protective clothing/ eye protection/ face protection. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

P310 rinsing.
Immediately call a POISON CENTER or doctor/ physician.

Hazardous components which must be listed on the label:

4,4'-methylenebis(cyclohexylamine)

3-aminomethyl-3,5,5-trimethylcyclohexylamine

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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Cycloaliphatic amine based mixture

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
4,4'-methylenebis(cyclohexylamine)	1761-71-3 217-168-8	Acute Tox.4; H302 Skin Corr.1A; H314 Skin Sens.1; H317 STOT RE2; H373 Aquatic Chronic2; H411	>= 30 - < 50
3-aminomethyl-3,5,5-trimethylcyclohexylamine	2855-13-2 220-666-8 01-2119514687-32	Acute Tox.4; H312 Acute Tox.4; H302 Skin Corr.1B; H314 Skin Sens.1; H317 Aquatic Chronic3; H412	>= 30 - < 50
Trimethylolpropane poly(oxypropylene)triamine	39423-51-3	Acute Tox.4; H302 Acute Tox.4; H312 Eye Dam.1; H318 Aquatic Chronic2; H411	>= 12,5 - < 20
benzyl alcohol	100-51-6 202-859-9 01-2119492630-38	Acute Tox.4; H302 Acute Tox.4; H332 Eye Irrit.2; H319	>= 3 - < 5

For explanation of abbreviations see section 16.

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Show this safety data sheet to the doctor in attendance.
Keep warm and in a quiet place.
Take off all contaminated clothing immediately.
- If inhaled : Move to fresh air.
Keep patient warm and at rest.
If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.
If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : Wash off immediately with soap and plenty of water.
Do NOT use solvents or thinners.
If on clothes, remove clothes.
Burns must be treated by a physician.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,
for at least 15 minutes.
If eye irritation persists, consult a specialist.
If easy to do, remove contact lens, if worn.
- If swallowed : Do NOT induce vomiting.
If a person vomits when lying on his back, place him in the recovery position.
Call a physician immediately.
Give small amounts of water to drink.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : corrosive effects
Burn

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Carbon dioxide (CO2)
Foam
Dry powder
Water mist
- Unsuitable extinguishing media : None known.

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : The pressure in sealed containers can increase under the influence of heat.
Cool closed containers exposed to fire with water spray.
Hazardous decomposition products formed under fire conditions.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : In the event of fire and/or explosion do not breathe fumes.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Immediately evacuate personnel to safe areas.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Refer to protective measures listed in sections 7 and 8.
Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains.

6.2 Environmental precautions

Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
Try to prevent the material from entering drains or water courses.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Pick up and transfer to properly labelled containers.

6.4 Reference to other sections

For personal protection see section 8.

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Do not breathe vapours or spray mist.
Avoid inhalation, ingestion and contact with skin and eyes.
Wear personal protective equipment.
Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition.
- Hygiene measures : Provide adequate ventilation. Wash hands and face before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.
- Further information on storage conditions : Protect from moisture.
- Advice on common storage : Keep away from isocyanates.
Do not store near acids.
Keep away from oxidizing agents.
- Other data : Stable at normal ambient temperature and pressure.

7.3 Specific end use(s)

- Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

- Trimethylolpropane : End Use: Workers
poly(oxypropylene)triamine : Exposure routes: Skin contact
Potential health effects: Long-term systemic effects
Value: 1,6 mg/kg
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 14 mg/m³

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

benzyl alcohol : End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 3,48 mg/m³
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Long-term systemic effects
Value: 0,8 mg/kg
: End Use: Workers
Exposure routes: Inhalation
Potential health effects: Short-term exposure, Systemic effects
Value: 450 mg/m³
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term exposure, Systemic effects
Value: 90 mg/m³
End Use: Workers
Exposure routes: Skin contact
Potential health effects: Short-term exposure, Systemic effects
Value: 47 mg/kg
End Use: Workers
Exposure routes: Skin contact
Potential health effects: Long-term exposure, Systemic effects
Value: 9,5 mg/kg
End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Short-term exposure, Systemic effects
Value: 25 mg/kg
End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Long-term exposure, Systemic effects
Value: 5 mg/kg
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Short-term exposure, Systemic effects
Value: 40,55 mg/m³
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term exposure, Systemic effects
Value: 8,11 mg/m³
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Short-term exposure, Systemic effects
Value: 28,5 mg/kg
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Long-term exposure, Systemic effects
Value: 5,7 mg/kg

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

3-aminomethyl-3,5,5-trimethylcyclohexylamine : Fresh water
Value: 0,06 mg/l
Marine water
Value: 0,006 mg/l
Intermittent releases
Value: 0,23 mg/l

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

	Fresh water sediment Value: 5,784 mg/kg
	Marine sediment Value: 0,578 mg/kg
	Sewage treatment plant Value: 3,18 mg/l
	Soil Value: 1,121 mg/kg
Trimethylolpropane poly(oxypropylene)triamine	: Fresh water Value: 0,0044 mg/l
	Marine water Value: 0,00044 mg/l
	Intermittent releases Value: 0,044 mg/l
	Fresh water sediment Value: 0,02 mg/kg
	Marine sediment Value: 0,002 mg/kg
	Soil Value: 0,002 mg/kg
	Sewage treatment plant Value: 10 mg/l
benzyl alcohol	: Fresh water Value: 1 mg/l
	Marine water Value: 0,1 mg/l
	Fresh water sediment Value: 5,27 mg/kg
	Marine sediment Value: 0,527 mg/kg
	Soil Value: 0,456 mg/kg
	Sewage treatment plant Value: 39 mg/l
	Intermittent releases Value: 2,3 mg/l

8.2 Exposure controls

Engineering measures

Effective exhaust ventilation system
 effective ventilation in all processing areas

Personal protective equipment

Eye protection	: Safety glasses with side-shields conforming to EN166 Do not wear contact lenses. Ensure that eyewash stations and safety showers are close to the workstation location.
Hand protection Material	: Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374.
Skin and body protection	: Protective suit
Respiratory protection	: Use respirator when performing operations involving potential

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

exposure to vapour of the product.
The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.
Respirator with a vapour filter (EN 141)

Protective measures : Avoid contact with skin.
Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid

Colour : light yellow

Odour : ammoniacal

Odour Threshold : not determined

pH : not determined

Melting point/freezing point : Not applicable

Boiling point/boiling range : > 150 °C

Flash point : > 100 °C

Evaporation rate : not determined

Upper explosion limit : Not applicable

Lower explosion limit : Not applicable

Vapour pressure : Not applicable

Relative vapour density : not determined

Density : 0,96 g/cm³ (25 °C)

Bulk density : not determined

Solubility(ies)
Solubility in other solvents : not determined

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : Not applicable

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

Thermal decomposition : Method: No data available

Viscosity
Viscosity, dynamic : 30 - 60 mPa.s (25 °C)

Viscosity, kinematic : not determined

Explosive properties : Not applicable

Oxidizing properties : Not applicable

9.2 Other information

Surface tension : not determined

Sublimation point : Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with the following substances:
Acids
Strong oxidizing agents

10.4 Conditions to avoid

Conditions to avoid : No decomposition if used as directed.

10.5 Incompatible materials

Materials to avoid : Strong acids
Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products : This product may release the following:
Nitrogen oxides (NOx)
Carbon monoxide
Carbon dioxide (CO2)

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity : Acute toxicity estimate : 514,91 mg/kg
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Acute oral toxicity : Acute toxicity estimate : 500 mg/kg
Method: Converted acute toxicity point estimate

Acute dermal toxicity : Acute toxicity estimate : 1.100 mg/kg
Method: Converted acute toxicity point estimate

Trimethylolpropane poly(oxypropylene)triamine:

Acute oral toxicity : LD50 (Rat, female): 550 mg/kg
Method: OECD Test Guideline 425
GLP: yes

Acute dermal toxicity : LD50 (Rat, male and female): > 1.000 mg/kg
Method: OECD Test Guideline 402
GLP: yes

benzyl alcohol:

Acute inhalation toxicity : LC50 (Rat, male and female): > 4.178 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes

Skin corrosion/irritation

Product:

Remarks: Acute dermal irritation/corrosion

Components:

Trimethylolpropane poly(oxypropylene)triamine:

Species: Rabbit
Method: OECD Test Guideline 404
Result: Mild skin irritation
GLP: yes

benzyl alcohol:

Species: Rabbit
Method: OECD Test Guideline 404

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

Result: No skin irritation
GLP: yes

Serious eye damage/eye irritation

Product:

Remarks: Severe eye irritation

Components:

benzyl alcohol:

Species: Rabbit
Method: OECD Test Guideline 405
Result: Eye irritation
GLP: yes

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

Trimethylolpropane poly(oxypropylene)triamine:

Test Type: Buehler Test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - single exposure

STOT - repeated exposure

Repeated dose toxicity

Product:

Remarks: No data available

Aspiration toxicity

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

No aspiration toxicity classification

Further information

Product:

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

Remarks: No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 110 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: Directive 67/548/EEC, Annex V, C.1.
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 23 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : ErC50 (Scenedesmus capricornutum (fresh water algae)): > 50 mg/l
Exposure time: 72 h
Test Type: static test
Method: Directive 67/548/EEC, Annex V, C.3.
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 3 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
GLP: yes

Trimethylolpropane poly(oxypropylene)triamine:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 13 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 4,4 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

benzyl alcohol:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 230 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 770 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Biodegradability : Test Type: aerobic
Result: Not readily biodegradable.
Method: Directive 67/548/EEC Annex V, C.4.A.
GLP: yes

Trimethylolpropane poly(oxypropylene)triamine:

Biodegradability : Test Type: aerobic
Result: Not readily biodegradable.
Method: OECD Test Guideline 301F
GLP: yes

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Partition coefficient: n- : log Pow: 0,99

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

octanol/water

Method: OECD Test Guideline 107
GLP: yes

Trimethylolpropane poly(oxypropylene)triamine:

Partition coefficient: n- : log Pow: -1,13 (20 °C)
octanol/water pH: 12,7
GLP: yes

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : 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..

12.6 Other adverse effects

Product:

Additional ecological information : Remarks: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : In accordance with local and national regulations.
Container hazardous when empty.
Do not dispose of with domestic refuse.
Do not mix waste streams during collection.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

14.1 UN number

ADR/RID/ADN : UN 2735

IMDG : UN 2735

IATA : UN 2735

14.2 UN proper shipping name

ADR/RID/ADN : AMINES, LIQUID, CORROSIVE, N.O.S.
(Cyclohexanamine, 4,4'-methylenebis)

IMDG : AMINES, LIQUID, CORROSIVE, N.O.S.
(Cyclohexanamine, 4,4'-methylenebis)

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

IATA : Amines, liquid, corrosive, n.o.s.
(Cyclohexanamine, 4,4'-methylenebis)

14.3 Transport hazard class(es)

ADR/RID/ADN : 8

IMDG : 8

IATA : 8

14.4 Packing group

ADR/RID/ADN
Packing group : III
Classification Code : C7
Hazard Identification Number : 80
Labels : 8

IMDG
Packing group : III
Labels : 8
EmS Code : F-A, S-B
Remarks : IMDG Code segregation group 18 - Alkalis

IATA
Packing instruction (cargo aircraft) : 856
Packing instruction (passenger aircraft) : 852
Packing group : III
Labels : 8

14.5 Environmental hazards

ADR/RID/ADN
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

14.6 Special precautions for user

Not applicable

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

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 - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

Elan-tech® W 152 MR

Version 3.0 SDB_GB

Revision Date 18.01.2016

Print Date 20.01.2016

- REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).
- REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

E2	ENVIRONMENTAL HAZARDS	Quantity 1 200 t	Quantity 2 500 t
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15.2 Chemical Safety Assessment

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.
H319 : Causes serious eye irritation.
H332 : Harmful if inhaled.
H373 : May cause damage to organs through prolonged or repeated exposure if swallowed.
H411 : Toxic to aquatic life with long lasting effects.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

- Acute Tox. : Acute toxicity
Aquatic Chronic : Chronic aquatic toxicity
Eye Dam. : Serious eye damage
Eye Irrit. : Eye irritation
Skin Corr. : Skin corrosion
Skin Sens. : Skin sensitisation
STOT RE : Specific target organ toxicity - repeated exposure

Further information

- Training advice : Provide adequate information, instruction and training for operators.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

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

1.1 Product identifier

Trade name : Elan-tech® W 152.1 HR

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

Use of the Sub-
stance/Mixture : Epoxy Hardener

1.3 Details of the supplier of the safety data sheet

Company : ELANTAS Italia S.r.l.
Strada Antolini 1
43044 Collecchio
Italy
Telephone : +3907363081
Telefax : +390736402746
E-mail address : msds.elantas.italia@altana.com

1.4 Emergency telephone number

+39 0736 3081 (8-17 h)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, Category 4	H302: Harmful if swallowed.
Skin corrosion, Category 1A	H314: Causes severe skin burns and eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

Classification (67/548/EEC, 1999/45/EC)

Corrosive	R35: Causes severe burns.
Harmful	R48/22: Harmful: danger of serious damage to health by prolonged exposure if swallowed. R20/21/22: Harmful by inhalation, in contact with skin and if swallowed.
Sensitising	R43: May cause sensitisation by skin contact.

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Dangerous for the environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements : EUH071 Corrosive to the respiratory tract.

Precautionary statements : **Prevention:**
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.

Hazardous components which must be listed on the label:

3-aminomethyl-3,5,5-trimethylcyclohexylamine

4,4'-methylenebis(cyclohexylamine)

3,6,9,12-tetra-azatetradecamethylenediamine

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, reaction products with 3-aminomethyl-3,5,5

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

3,6,9-triazaundecamethylenediamine

3-aminopropyltriethoxysilane

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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Cycloaliphatic and aliphatic amine based mixture

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
3-aminomethyl-3,5,5-trimethylcyclohexylamine	2855-13-2 220-666-8 01- 2119514687-32	C; R34 Xn; R21/22 R43 R52-R53	Acute Tox. 4; H312 Acute Tox. 4; H302 Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Chronic 3; H412	>= 20 - < 25
m-phenylene-bis(methylamine)	1477-55-0 216-032-5 01- 2119480150-50	C; R34 R52/53 Xn; R20/22 R43	Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Corr. 1B; H314 Aquatic Chronic 3; H412 Skin Sens. 1B; H317	>= 20 - < 25
4,4'-methylene-bis(cyclohexylamine)	1761-71-3 217-168-8	Xi; R43 C; R35 Xn; R22 N; R51/53 Xn; R48/22	Acute Tox. 4; H302 Skin Corr. 1A; H314 Skin Sens. 1; H317 STOT RE 2; H373 Aquatic Chronic 2; H411	>= 20 - < 25
benzyl alcohol	100-51-6 202-859-9 01- 2119492630-38	Xn; R20/22	Acute Tox. 4; H332 Acute Tox. 4; H302	>= 12,5 - < 20
3,6,9,12-tetra-azatetradecamethylenediamine	4067-16-7 223-775-9	C; R34 R43 N; R50-R53	Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	>= 7 - < 10

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

			Acute Tox. 4; H302 Acute Tox. 4; H312	
4,4'- Isopropylidenediphenol, oligomeric reaction products with 1-chloro- 2,3-epoxypropane, reaction products with 3-aminomethyl-3,5,5	38294-64-3	Xn; R21/22 C; R34 R43 R52/53	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Chronic 3; H412	>= 1 - < 2,5
3,6,9- triazoundecamethyl- enediamine	112-57-2 203-986-2 /	C; R34 Xn; R21/22 R43 N; R51-R53	Acute Tox. 4; H312 Acute Tox. 4; H302 Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Chronic 2; H411	>= 1 - < 2,5
3- aminopropyltriethoxysi- lane	919-30-2 213-048-4 01- 2119480479-24	C; R34 Xn; R22 Xi; R43	Acute Tox. 4; H302 Skin Corr. 1; H314 Skin Sens. 1; H317	>= 0,25 - < 0,5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Show this safety data sheet to the doctor in attendance.
Keep warm and in a quiet place.
Take off all contaminated clothing immediately.
- If inhaled : Move to fresh air.
Keep patient warm and at rest.
If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.
If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : Wash off immediately with soap and plenty of water.
Do NOT use solvents or thinners.
If on clothes, remove clothes.
Burns must be treated by a physician.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,
for at least 15 minutes.
If eye irritation persists, consult a specialist.
If easy to do, remove contact lens, if worn.
- If swallowed : Do NOT induce vomiting.
If a person vomits when lying on his back, place him in the recovery position.
Call a physician immediately.
Give small amounts of water to drink.

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : corrosive effects
Burn

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO₂)
Foam
Dry powder
Water mist

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : The pressure in sealed containers can increase under the influence of heat.
Cool closed containers exposed to fire with water spray.
Hazardous decomposition products formed under fire conditions.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Further information : In the event of fire and/or explosion do not breathe fumes.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Immediately evacuate personnel to safe areas.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Refer to protective measures listed in sections 7 and 8.
Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains.

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

6.2 Environmental precautions

- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
Try to prevent the material from entering drains or water courses.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Pick up and transfer to properly labelled containers.

6.4 Reference to other sections

- For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Do not breathe vapours or spray mist.
Avoid inhalation, ingestion and contact with skin and eyes.
Wear personal protective equipment.
Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition.
- Hygiene measures : Provide adequate ventilation. Wash hands and face before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.
- Further information on storage conditions : Protect from moisture.
- Advice on common storage : Keep away from isocyanates.
Do not store near acids.
Keep away from oxidizing agents.
- Other data : Stable at normal ambient temperature and pressure.

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

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

benzyl alcohol : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Short-term exposure, Systemic effects
Value: 450 mg/m³
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term exposure, Systemic effects
Value: 90 mg/m³
End Use: Workers
Exposure routes: Skin contact
Potential health effects: Short-term exposure, Systemic effects
Value: 47 mg/kg
End Use: Workers
Exposure routes: Skin contact
Potential health effects: Long-term exposure, Systemic effects
Value: 9,5 mg/kg
End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Short-term exposure, Systemic effects
Value: 25 mg/kg
End Use: Consumers
Exposure routes: Ingestion
Potential health effects: Long-term exposure, Systemic effects
Value: 5 mg/kg
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Short-term exposure, Systemic effects
Value: 40,55 mg/m³
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term exposure, Systemic effects
Value: 8,11 mg/m³
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Short-term exposure, Systemic effects
Value: 28,5 mg/kg
End Use: Consumers
Exposure routes: Skin contact
Potential health effects: Long-term exposure, Systemic effects
Value: 5,7 mg/kg
3-aminopropyltriethoxysilane : End Use: Workers
Exposure routes: Skin contact
Potential health effects: Acute systemic effects, Long-term sys-

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

temic effects
Value: 8,3 mg/kg
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Acute systemic effects, Long-term systemic effects
Value: 59 mg/m3

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

3-aminomethyl-3,5,5-trimethylcyclohexylamine	:	Fresh water Value: 0,06 mg/l Marine water Value: 0,006 mg/l Intermittent releases Value: 0,23 mg/l Fresh water sediment Value: 5,784 mg/kg Marine sediment Value: 0,578 mg/kg Sewage treatment plant Value: 3,18 mg/l Soil Value: 1,121 mg/kg
benzyl alcohol	:	Fresh water Value: 1 mg/l Marine water Value: 0,1 mg/l Fresh water sediment Value: 5,27 mg/kg Marine sediment Value: 0,527 mg/kg Soil Value: 0,456 mg/kg Sewage treatment plant Value: 39 mg/l Intermittent releases Value: 2,3 mg/l
3-aminopropyltriethoxysilane	:	Fresh water Value: 0,33 mg/l Marine water Value: 0,033 mg/l Intermittent releases Value: 3,3 mg/l Fresh water sediment Value: 0,26 mg/kg Soil Value: 0,04 mg/kg Sewage treatment plant Value: 13 mg/l

8.2 Exposure controls

Engineering measures

Effective exhaust ventilation system
effective ventilation in all processing areas

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Personal protective equipment

- Eye protection : Safety glasses with side-shields conforming to EN166
Do not wear contact lenses.
Ensure that eyewash stations and safety showers are close to the workstation location.
- Hand protection
Material : Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374.
- Skin and body protection : Protective suit
- Respiratory protection : Use respirator when performing operations involving potential exposure to vapour of the product.
The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.
Respirator with a vapour filter (EN 141)
- Protective measures : Avoid contact with skin.
Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance : liquid
- Colour : light yellow
- Odour : ammoniacal
- Odour Threshold : not determined
- pH : not determined
- Melting point/freezing point : Not applicable
- Boiling point/boiling range : > 150 °C
- Flash point : 100 °C
- Evaporation rate : not determined
- Upper explosion limit : Not applicable
- Lower explosion limit : Not applicable
- Vapour pressure : Not applicable
- Relative vapour density : not determined

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Density	: 1,04 g/cm ³ (25 °C)
Bulk density	: not determined
Solubility(ies)	
Solubility in other solvents	: not determined
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: Not applicable
Thermal decomposition	: Method: No data available
Viscosity	
Viscosity, dynamic	: 30 - 80 mPa.s (25 °C)
Viscosity, kinematic	: not determined
Explosive properties	: Not applicable
Oxidizing properties	: Not applicable

9.2 Other information

Surface tension	: not determined
Sublimation point	: Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions	: Reacts with the following substances: Acids Strong oxidizing agents
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10.4 Conditions to avoid

Conditions to avoid : No decomposition if used as directed.

10.5 Incompatible materials

Materials to avoid	: Strong acids Strong oxidizing agents
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Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

10.6 Hazardous decomposition products

Hazardous decomposition products : This product may release the following:
Nitrogen oxides (NOx)
Carbon monoxide
Carbon dioxide (CO2)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity : Acute toxicity estimate : 526,24 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate : > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Acute oral toxicity : Acute toxicity estimate : 500 mg/kg
Method: Converted acute toxicity point estimate

Acute dermal toxicity : Acute toxicity estimate : 1.100 mg/kg
Method: Converted acute toxicity point estimate

benzyl alcohol:

Acute inhalation toxicity : LC50 (Rat, male and female): > 4.178 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
GLP: yes

3,6,9-triazaundecamethylenediamine:

Acute oral toxicity : Acute toxicity estimate : 500 mg/kg
Method: Converted acute toxicity point estimate

Acute dermal toxicity : Acute toxicity estimate : 1.100 mg/kg
Method: Converted acute toxicity point estimate

Skin corrosion/irritation

Product:

Remarks: Acute dermal irritation/corrosion

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Components:

benzyl alcohol:

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Serious eye damage/eye irritation

Product:

Remarks: Severe eye irritation

Components:

benzyl alcohol:

Species: Rabbit
Method: OECD Test Guideline 405
Result: Eye irritation
GLP: yes

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

3-aminopropyltriethoxysilane:

Test Type: Buehler Test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.
GLP: yes

Germ cell mutagenicity

Carcinogenicity

Reproductive toxicity

STOT - single exposure

STOT - repeated exposure

Repeated dose toxicity

Product:

Remarks: No data available

Aspiration toxicity

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

No aspiration toxicity classification

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Further information

Product:

Remarks: No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 110 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: Directive 67/548/EEC, Annex V, C.1.
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 23 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : ErC50 (Scenedesmus capricornutum (fresh water algae)): > 50 mg/l
Exposure time: 72 h
Test Type: static test
Method: Directive 67/548/EEC, Annex V, C.3.
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 3 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
GLP: yes

benzyl alcohol:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 230 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 770 mg/l
Exposure time: 72 h

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

3-aminopropyltriethoxysilane:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 934 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 331 mg/l
aquatic invertebrates : Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : EC50 (Scenedesmus subspicatus): > 1.000 mg/l
Exposure time: 72 h
Test Type: static test
Method: Directive 67/548/EEC, Annex V, C.3.
GLP: yes

12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Biodegradability : Test Type: aerobic
Result: Not readily biodegradable.
Method: Directive 67/548/EEC Annex V, C.4.A.
GLP: yes

3-aminopropyltriethoxysilane:

Biodegradability : Test Type: aerobic
Result: Not readily biodegradable.
Method: Directive 67/548/EEC Annex V, C.4.A.
GLP: yes

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Components:

3-aminomethyl-3,5,5-trimethylcyclohexylamine:

Partition coefficient: n- : log Pow: 0,99
octanol/water : Method: OECD Test Guideline 107
GLP: yes

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : 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..

12.6 Other adverse effects

Product:

Additional ecological information : Remarks: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : In accordance with local and national regulations.
Container hazardous when empty.
Do not dispose of with domestic refuse.
Do not mix waste streams during collection.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

14.1 UN number

ADR/RID : UN 2735
IMDG : UN 2735
IATA : UN 2735

14.2 UN proper shipping name

ADR/RID : AMINES, LIQUID, CORROSIVE, N.O.S.
(Cyclohexanamine, 4,4'-methylenebis, m-Phenylenebis(methylamine))

IMDG : AMINES, LIQUID, CORROSIVE, N.O.S.
(Cyclohexanamine, 4,4'-methylenebis, m-Phenylenebis(methylamine))

IATA : Amines, liquid, corrosive, n.o.s.
(Cyclohexanamine, 4,4'-methylenebis, m-Phenylenebis(methylamine))

14.3 Transport hazard class(es)

ADR/RID : 8

Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

IMDG : 8

IATA : 8

14.4 Packing group

ADR/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

Packing instruction (cargo aircraft) : 856

Packing instruction (passenger aircraft) : 852

Packing group : III

Labels : 8

14.5 Environmental hazards

ADR/RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

14.6 Special precautions for user

Not applicable

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

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 - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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

Seveso II - Directive 2003/105/EC amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

		Quantity 1	Quantity 2
9b	Dangerous for the envi-	200 t	500 t

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014

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15.2 Chemical Safety Assessment

Not applicable

SECTION 16: Other information

Full text of R-Phrases

R20/22	: Harmful by inhalation and if swallowed.
R21/22	: Harmful in contact with skin and if swallowed.
R22	: Harmful if swallowed.
R34	: Causes burns.
R35	: Causes severe burns.
R43	: May cause sensitisation by skin contact.
R48/22	: Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R50	: Very toxic to aquatic organisms.
R51	: Toxic to aquatic organisms.
R51/53	: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52	: Harmful to aquatic organisms.
R52/53	: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	: May cause long-term adverse effects in the aquatic environment.

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.
H332	: Harmful if inhaled.
H373	: May cause damage to organs through prolonged or repeated exposure if swallowed.
H400	: Very toxic to aquatic life.
H410	: Very toxic to aquatic life with long lasting effects.
H411	: Toxic to aquatic life with long lasting effects.
H412	: Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Acute	: Acute aquatic toxicity
Aquatic Chronic	: Chronic aquatic toxicity
Skin Corr.	: Skin corrosion
Skin Sens.	: Skin sensitisation
STOT RE	: Specific target organ toxicity - repeated exposure

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006



Elan-tech® W 152.1 HR

Version 1.0 SDB_GB

Revision Date 04.11.2014

Print Date 01.12.2014