

EPOCAST® 1618 D US

Version 1.1 Revision Date: 04/25/2017 SDS Number: 400001009082 Date of last issue: 04/12/2017
Date of first issue: 04/12/2017

SECTION 1. IDENTIFICATION

Product name : EPOCAST® 1618 D US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547
E-mail address of person responsible for the SDS : MSDS@huntsman.com
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Epoxy constituents

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200**

Skin irritation : Category 2
Eye irritation : Category 2A
Skin sensitisation : Category 1
Germ cell mutagenicity : Category 1B
Reproductive toxicity : Category 2
Acute aquatic toxicity : Category 2
Chronic aquatic toxicity : Category 2

GHS label elements

Hazard pictograms : 

Signal word : Danger

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H340 May cause genetic defects.
H361 Suspected of damaging fertility or the unborn child.

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H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 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/ protective clothing/ eye protection/ face protection.
Response:
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.
 P362 Take off contaminated clothing and wash before reuse.
 P391 Collect spillage.
Storage:
 P405 Store locked up.
Disposal:
 P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
 Chemical nature : Epoxy constituents

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Bisphenol A epoxy resin	25068-38-6	25 - 30
o-cresyl glycidyl ether	2210-79-9	10 - 20
epoxy phenol novolac resin	28064-14-4	5 - 10
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	5 - 10
dimethyl methylphosphonate	756-79-6	2.5 - 5
Siloxanes and Silicones, di-Me, 3-hydroxypropyl Me, ethoxylated	68937-54-2	1 - 2.5
ethylbenzene	100-41-4	0.1 - 0.25

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The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Induce vomiting immediately and call a physician.
Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Notes to physician : No information available.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : No data is available on the product itself.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

No data is available on the product itself.
- Hazardous combustion products : No data is available on the product itself.

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- No data is available on the product itself.
- Specific extinguishing methods : No data is available on the product itself.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- 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

- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Advice on safe handling : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to 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.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.
- Materials to avoid : No data available

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	OSHA Z-1

Personal protective equipment

- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
- Filter type : Combined particulates and organic vapour type
- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
- Hand protection
- Material : butyl-rubber
- Break through time : > 8 h
- Material : Solvent-resistant gloves (butyl-rubber)
- 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.
- Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : paste
- Colour : off-white

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Odour : slight

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 °C

Flash point : > 100 °C
Method: Pensky-Martens 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 : No data is available on the product itself.

Lower explosion limit : No data is available on the product itself.

Vapour pressure : < 1 hPa (20 °C)

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

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

Density : 0.63 - 0.66 g/cm³ (25 °C)

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 : No data is available on the product itself.

Decomposition temperature : > 200 °C

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity : No data is available on the product itself.

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.

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SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: Heat, flames and sparks.
	No data available
Incompatible materials	: No data available
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Oxides of phosphorus Nitrogen oxides (NO _x) Carbon oxides Burning produces noxious and toxic fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : No data is available on the product itself.

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: > 200 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation**Product:**

Remarks: May cause skin irritation and/or dermatitis.

Serious eye damage/eye irritation**Product:**

Remarks: May cause irreversible eye damage.

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Respiratory or skin sensitisation**Product:**

Remarks: Causes sensitisation.

Components:Siloxanes and Silicones, di-Me, 3-hydroxypropyl Me, ethoxylated:
Assessment: Harmful if inhaled.**Germ cell mutagenicity****Components:**

Bisphenol A epoxy resin:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: positive

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive

o-cresyl glycidyl ether:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive

epoxy phenol novolac resin:

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

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation
Result: positive

2,2-bis(acryloyloxymethyl)butyl acrylate:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive
GLP: yes

ethylbenzene:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: no**Components:**

Bisphenol A epoxy resin:

Genotoxicity in vivo : Cell type: Germ
Application Route: Oral
Method: OECD Test Guideline 478

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Result: negative

Cell type: Somatic
Application Route: Oral
Dose: 0 - 5000 mg/kg
Method: OPPTS 870.5395
Result: negative

o-cresyl glycidyl ether:
Genotoxicity in vivo

: Application Route: Oral
Dose: 2000 mg/kg
Method: OECD Test Guideline 474
Result: negative

Application Route: Dermal
Exposure time: 5 d
Dose: 500 mg/kg
Result: negative

Application Route: Dermal
Exposure time: 8 Weeks
Dose: 1.5 mg/kg
Method: OECD Test Guideline 478
Result: positive

epoxy phenol novolac resin:
Genotoxicity in vivo

: Cell type: Germ
Application Route: Oral
Result: negative

Cell type: Somatic
Application Route: Oral
Dose: 0 - 5000 mg/kg
Result: negative

2,2-bis(acryloyloxymethyl)butyl acrylate:

Genotoxicity in vivo : Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 437.5, 875 and 1750 mg/kg bw
Method: OECD Test Guideline 474
Result: negative
GLP: yes

dimethyl methylphosphonate:
Genotoxicity in vivo

: Method: OECD Test Guideline 478
Result: positive

ethylbenzene:
Genotoxicity in vivo

: Method: OECD Test Guideline 474
Result: negative

Method: OECD Test Guideline 486
Result: negative

Components:

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Bisphenol A epoxy resin:
Germ cell mutagenicity-
Assessment : Weight of evidence does not support classification as a germ cell mutagen.

o-cresyl glycidyl ether:
Germ cell mutagenicity-
Assessment : Positive results from in vitro mammalian mutagenicity assays, chemical structure activity relationship to known germ cell mutagen

dimethyl methylphosphonate:
Germ cell mutagenicity-
Assessment : In vivo tests showed mutagenic effects

Germ cell mutagenicity-
Assessment : No data available

Carcinogenicity**Components:**

Bisphenol A epoxy resin:
Species: Rat, (male and female)
Application Route: Oral
Exposure time: 24 month(s)
Dose: 15 mg/kg
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 453
Result: negative

Species: Mouse, (male)
Application Route: Dermal
Exposure time: 24 month(s)
Dose: 0.1 mg/kg
Frequency of Treatment: 3 days/week
Method: OECD Test Guideline 453
Result: negative

Species: Rat, (female)
Application Route: Dermal
Exposure time: 24 month(s)
Dose: 1 mg/kg
Frequency of Treatment: 5 days/week
Method: OECD Test Guideline 453
Result: negative

epoxy phenol novolac resin:
Species: Rat, (male and female)
Application Route: Oral
Exposure time: 24 month(s)
Dose: 15 mg/kg
Frequency of Treatment: 7 daily
Method: OECD Test Guideline 453
Result: negative

Species: Mouse, (male)

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Application Route: Dermal
 Exposure time: 24 month(s)
 Dose: .1 mg/kg
 Frequency of Treatment: 3 daily
 Method: OECD Test Guideline 453
 Result: negative

Species: Rat, (female)
 Application Route: Dermal
 Exposure time: 24 month(s)
 Dose: 1 mg/kg
 Frequency of Treatment: 5 daily
 Method: OECD Test Guideline 453
 Result: negative

dimethyl methylphosphonate:
 Species: Rat, (male and female)
 Application Route: Oral
 Exposure time: 103 weeks
 Dose: 500 mg/kg
 Frequency of Treatment: 5 daily
 Result: Not classified due to inconclusive data.
 Target Organs: Kidney

Target Organs: Cardio-vascular system

Carcinogenicity - Assessment : No data available

IARC Group 2B: Possibly carcinogenic to humans

ethylbenzene

ACGIH Confirmed animal carcinogen with unknown relevance to humans

ethylbenzene

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity**Components:**

Bisphenol A epoxy resin:
 Effects on fertility : Test Type: Two-generation study
 Species: Rat, male and female
 Application Route: Oral
 Dose: >750 milligram per kilogram
 General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight

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General Toxicity F1: No-observed-effect level: 540 mg/kg body weight

Symptoms: No adverse effects

Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic development were detected.

epoxy phenol novolac resin:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 416

Result: No effects on fertility and early embryonic development were detected.

2,2-bis(acryloyloxymethyl)butyl acrylate:

Species: Rat, male and female

Application Route: Oral

Dose: 0, 30, 100, 300 milligram per kilogram

Fertility: No observed adverse effect level: 300 mg/kg body weight

Method: OECD Test Guideline 422

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

GLP: yes

dimethyl methylphosphonate:

Species: Rat, male

Application Route: Oral

ethylbenzene:

General Toxicity - Parent: No observed adverse effect level: 500 ppm

Method: OECD Test Guideline 416

GLP: yes

Components:

Bisphenol A epoxy resin:

Effects on foetal development

: Species: Rabbit, female

Application Route: Dermal

General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight

Method: Other guidelines

Result: No teratogenic effects

Species: Rabbit, female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight

Method: OECD Test Guideline 414

Result: No teratogenic effects

Species: Rat, female

Application Route: Oral

General Toxicity Maternal: No observed adverse effect level: 180 mg/kg body weight

Method: OECD Test Guideline 414

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Result: No teratogenic effects

epoxy phenol novolac resin:

Species: Rabbit, female
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level:
30 mg/kg body weight
Result: No teratogenic effects

Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
60 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

2,2-bis(acryloyloxymethyl)butyl acrylate:

Species: Rat, female
Application Route: Oral
Dose: 500 milligram per kilogram
Duration of Single Treatment: 10 d
General Toxicity Maternal: No observed adverse effect level:
500 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: >
500 mg/kg body weight
Method: OECD Test Guideline 414
Result: No effects on fertility and early embryonic
development were detected.
GLP: yes

dimethyl methylphosphonate:

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: Lowest observed adverse effect
level: 1,000 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

ethylbenzene:

General Toxicity Maternal: No observed adverse effect level:
500 ppm
Teratogenicity: No observed adverse effect level: 2,000 ppm
Developmental Toxicity: No observed adverse effect level:
500 ppm

Components:

dimethyl methylphosphonate:

Reproductive toxicity - : Some evidence of adverse effects on sexual function and

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Assessment fertility, and/or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure**Components:**

ethylbenzene:

Exposure routes: Inhalation

Target Organs: Lungs, Liver, Kidney, Central nervous system

Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity**Components:**

Bisphenol A epoxy resin:

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion

Exposure time: 14 Weeks

Number of exposures: 7 d

Method: Subchronic toxicity

Species: Rat, male and female

NOEL: 10 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks

Number of exposures: 5 d

Method: Subchronic toxicity

Species: Mouse, male

NOAEL: 100 mg/kg

Application Route: Skin contact

Exposure time: 13 Weeks

Number of exposures: 3 d

Method: Subchronic toxicity

o-cresyl glycidyl ether:

Species: Rat, male and female

: > 4 ppm

Test atmosphere: vapour

Exposure time: 4 Weeks

Number of exposures: 6 h

Method: OECD Test Guideline 412

epoxy phenol novolac resin:

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion

Exposure time: 14 Weeks

Number of exposures: 7 d

Method: Subchronic toxicity

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Species: Rat, male and female
NOEL: 10 mg/kg
Application Route: Skin contact
Exposure time: 13 Weeks
Number of exposures: 5 d
Method: Subchronic toxicity

Species: Mouse, male
NOAEL: 100 mg/kg
Application Route: Skin contact
Exposure time: 13 Weeks
Number of exposures: 3 d
Method: Subchronic toxicity

2,2-bis(acryloyloxymethyl)butyl acrylate:
Species: Rat, male and female
NOAEL: 300 mg/kg
Application Route: Oral
Dose: 0, 30, 100, 300 mg/kg bw/day
Method: OECD Test Guideline 422
GLP: yes

dimethyl methylphosphonate:
Species: Rat, male and female
LOEL: 65 - 71 mg/kg
Application Route: Ingestion
Exposure time: 2,160 h
Method: Subchronic toxicity

ethylbenzene:
Species: Rat, male and female
NOAEL: 75 mg/kg bw
Application Route: oral (gavage)
Exposure time: 28 d
Dose: 75/250/750 mg/kg bw
Group: yes
Method: OECD Test Guideline 407
Target Organs: Liver
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
Remarks: Subacute toxicity

Species: Rat, male and female
NOAEL: 75 mg/kg bw
Application Route: oral (gavage)
Exposure time: 90 d
Dose: 75/250/750 mg/kg bw
Group: yes
Method: OECD Test Guideline 408
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

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Species: Mouse, male and female
NOAEL: 3.4 mg/l
Application Route: Inhalation
Exposure time: 28 d
Dose: 0,4/1,7/3,4 mg/L
Group: yes
Method: OECD Test Guideline 412

Species: Rat, male and female
NOAEL: 1084
NOAEL: mg/m³
Application Route: inhalation (vapour)
Exposure time: 104 week
Dose: 325/1084/3251 mg/m³
Group: yes
Method: OECD Test Guideline 453

Species: Rat, male and female
NOAEL: 4.74 mg/l
Application Route: Inhalation
Exposure time: 13 week
Dose: 0,47/1,18/2,37/3,55/4,74 mg/L
Group: yes
Method: OECD Test Guideline 413
Target Organs: Liver
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Species: Mouse, male and female
NOAEL: 3251
NOAEL: mg/m³
Application Route: Inhalation
Exposure time: 104 week
Dose: 325/1084/3251 mg/m³
Group: yes
Method: OECD Test Guideline 453

Species: Rabbit, male and female
NOAEL: 6.8 mg/l
Application Route: Inhalation
Exposure time: 28 d
Dose: 1,7/3,4/6,8 mg/L
Group: yes
Method: OECD Test Guideline 412

Components:

Siloxanes and Silicones, di-Me, 3-hydroxypropyl Me, ethoxylated:
Repeated dose toxicity - : Harmful if inhaled.
Assessment

Aspiration toxicity**Components:**

ethylbenzene:
May be fatal if swallowed and enters airways.

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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**Product:**

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:**

Bisphenol A epoxy resin:
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

o-cresyl glycidyl ether:
Toxicity to fish : LC50: 13 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

LC50 (Oncorhynchus mykiss (rainbow trout)): 2.8 - 5.1 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

LC50 (Brachydanio rerio (zebrafish)): ca. 6.5 mg/l

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Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

epoxy phenol novolac resin:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

2,2-bis(acryloyloxymethyl)butyl acrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 1.47 mg/l
Exposure time: 96 h
Test Type: static test
Method: DIN 38412

dimethyl methylphosphonate:

Toxicity to fish : LC50: > 1,000 mg/l
Exposure time: 48 h

ethylbenzene:

Toxicity to fish : LC50: 4.2 mg/l
Exposure time: 96 h

LC50: 9.2 mg/l
Exposure time: 96 h

LC50: 12.1 mg/l
Exposure time: 96 h

LC50: 5.1 mg/l
Exposure time: 96 h

Components:

Bisphenol A epoxy resin:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.7 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water

o-cresyl glycidyl ether:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): ca. 3.3 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

epoxy phenol novolac resin:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.7 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

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EC50 (Daphnia magna (Water flea)): 2.7 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water

2,2-bis(acryloyloxymethyl)butyl acrylate:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 19.9 mg/l
 Exposure time: 48 h
 Test Type: static test
 Method: Other guidelines

ethylbenzene:

Toxicity to daphnia and other aquatic invertebrates : EC50: 1.81 - 2.38 mg/l
 Exposure time: 48 h

Components:**Bisphenol A epoxy resin:**

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: EPA-660/3-75-009

o-cresyl glycidyl ether:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 5.1 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

epoxy phenol novolac resin:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water

2,2-bis(acryloyloxymethyl)butyl acrylate:

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 4.86 mg/l
 Exposure time: 96 h
 Test Type: static test
 Method: Directive 67/548/EEC, Annex V, C.3.

ethylbenzene:

Toxicity to algae : IC50: 4.6 mg/l
 Exposure time: 72 h

EC50: 3.6 mg/l
 Exposure time: 96 h

NOEC: 3.4 mg/l
 Exposure time: 96 h

EC50: 7.7 mg/l

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Exposure time: 96 h

M-Factor (Acute aquatic toxicity) : No data available

Components:

epoxy phenol novolac resin:
Toxicity to fish (Chronic toxicity) : GLP: yes

ethylbenzene:
Toxicity to fish (Chronic toxicity) : NOEL: 0.96 mg/l
Exposure time: 7 d

Components:

Bisphenol A epoxy resin:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

epoxy phenol novolac resin:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : No data available

Components:

Bisphenol A epoxy resin:
Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

o-cresyl glycidyl ether:
Toxicity to microorganisms : IC50: > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

epoxy phenol novolac resin:
Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

dimethyl methylphosphonate:
Toxicity to microorganisms : IC50: > 300 mg/l
Exposure time: 3 h

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Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

Components:

2,2-bis(acryloyloxymethyl)butyl acrylate:

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

ethylbenzene:

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

Components:

2,2-bis(acryloyloxymethyl)butyl acrylate:

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

dimethyl methylphosphonate:

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

Siloxanes and Silicones, di-Me, 3-hydroxypropyl Me, ethoxylated:

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

ethylbenzene:

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:

Bisphenol A epoxy resin:

Biodegradability : Inoculum: Sewage (STP effluent)
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

o-cresyl glycidyl ether:

Biodegradability : Inoculum: activated sludge
Concentration: 10 mg/l
Result: Not readily biodegradable.
Biodegradation: 17 %
Exposure time: 28 d

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Method: OECD Test Guideline 301B

epoxy phenol novolac resin:

Biodegradability

: Inoculum: Sewage (STP effluent)
 Concentration: 20 mg/l
 Result: Not readily biodegradable.
 Biodegradation: 5 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301F

2,2-bis(acryloyloxymethyl)butyl acrylate:

Biodegradability

: Test Type: aerobic
 Inoculum: activated sludge
 Concentration: 33 mg/l
 Result: Readily biodegradable.
 Biodegradation: 82 - 90 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301B
 GLP: yes

dimethyl methylphosphonate:

Biodegradability

: Biodegradation: 8 %
 Exposure time: 21 d
 Method: Simulation Test - Aerobic Sewage Treatment. A:
 Activated Sludge Units

ethylbenzene:

Biodegradability

: Result: Readily biodegradable.
 Biodegradation: > 60 %
 Exposure time: 28 d

Components:

dimethyl methylphosphonate:

Biochemical Oxygen
Demand (BOD)

: 11 mgO₂/g
 Incubation time: 5 d

Components:

dimethyl methylphosphonate:

Chemical Oxygen Demand
(COD): 895 mgO₂/g

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

Components:

Bisphenol A epoxy resin:

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Stability in water : Degradation half life(DT50): 4.83 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

o-cresyl glycidyl ether:
Stability in water : Degradation half life(DT50): 10.5 hrs (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 9.4 hrs (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 8.96 hrs (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

epoxy phenol novolac resin:
Stability in water : Degradation half life(DT50): 4.83 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

Bisphenol A epoxy resin:
Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

epoxy phenol novolac resin:
Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

ethylbenzene:
Bioaccumulation : Bioconcentration factor (BCF): 1.9

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Components:

Bisphenol A epoxy resin:
 Partition coefficient: n-octanol/water : log Pow: 3.242 (25 °C)
 pH: 7.1
 Method: OECD Test Guideline 117

o-cresyl glycidyl ether:
 Partition coefficient: n-octanol/water : log Pow: 2.5 (21 °C)
 Method: OECD Test Guideline 107

epoxy phenol novolac resin:
 Partition coefficient: n-octanol/water : log Pow: 3.242 (25 °C)
 pH: 7.1
 Method: OECD Test Guideline 117

dimethyl methylphosphonate:
 Partition coefficient: n-octanol/water : log Pow: -0.61

ethylbenzene:
 Partition coefficient: n-octanol/water : log Pow: 3.15

Mobility in soil

Mobility : No data available

Components:

Bisphenol A epoxy resin:
 Distribution among environmental compartments : Koc: 445

o-cresyl glycidyl ether:
 Distribution among environmental compartments : Koc: ca. 210
 Method: OECD Test Guideline 121

epoxy phenol novolac resin:
 Distribution among environmental compartments : Koc: 445

2,2-bis(acryloyloxymethyl)butyl acrylate:
 Distribution among environmental compartments : OECD Test Guideline 121
 log Koc: 2.2
 Method: OECD Test Guideline 121

ethylbenzene:
 Distribution among environmental compartments : Koc: 520
 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

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Endocrine disrupting potential : No data available

Components:

dimethyl methylphosphonate:
Adsorbed organic bound halogens (AOX) : 0 %

Hazardous to the ozone layer

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I
Substances

Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA**

UN/ID No.	: UN 3082
Proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (BISPHENOL A EPOXY RESIN, 1,2-CRESYL GLYCIDYL ETHER)
Class	: 9
Packing group	: III
Labels	: Miscellaneous

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Packing instruction (cargo aircraft) : 964
 Packing instruction (passenger aircraft) : 964

IMDG

UN number : UN 3082
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, 1,2-CRESYL GLYCIDYL ETHER)
 Class : 9
 Packing group : III
 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.

National Regulations**DOT Classification**

UN/ID/NA number : UN 3082
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BISPHENOL A EPOXY RESIN, 1,2-CRESYL GLYCIDYL ETHER)
 Class : 9
 Packing group : III
 Labels : CLASS 9
 ERG Code : 171
 Marine pollutant : yes(BISPHENOL A EPOXY RESIN, 1,2-CRESYL GLYCIDYL ETHER)
 Remarks : Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

SECTION 15. REGULATORY INFORMATION**EPCRA - Emergency Planning and Community Right-to-Know Act**

SARA 311/312 Hazards : Acute Health Hazard
 Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

ethylbenzene	100-41-4	0.1 - 1 %
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This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean

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Air Act Section 112 (40 CFR 61).

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

ethylbenzene	100-41-4
trimethyl phosphate	512-56-1

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

methanol	67-56-1
toluene	108-88-3

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

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or 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	: On the inventory, or 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)

TSCA - 5(a) Significant New Use Rule List of Chemicals

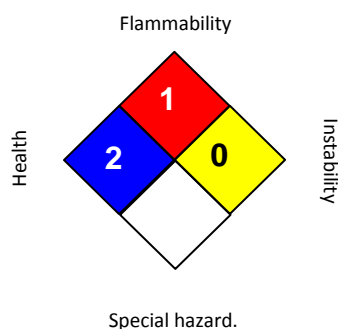
No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

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SECTION 16. OTHER INFORMATION**Further information****NFPA:****HMIS® IV:**

HEALTH	*	2
FLAMMABILITY		1
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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

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

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

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SECTION 1. IDENTIFICATION

Product name : EPOCAST® 1618 B US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America
Telephone : Non-Emergency: (800) 257-5547
E-mail address of person responsible for the SDS : MSDS@huntsman.com
Emergency telephone : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Hardener

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 2
Acute toxicity (Dermal) : Category 3
Skin corrosion : Category 1B
Serious eye damage : Category 1
Skin sensitization : Category 1
Reproductive toxicity : Category 2
Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)
Acute aquatic toxicity : Category 2
Chronic aquatic toxicity : Category 2

GHS Label element

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Hazard pictograms : 

Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.
 H311 Toxic in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H317 May cause an allergic skin reaction.
 H330 Fatal if inhaled.
 H335 May cause respiratory irritation.
 H361 Suspected of damaging fertility or the unborn child.
 H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P284 Wear respiratory protection.
Response:
 P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
 P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
 P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P362 Take off contaminated clothing and wash before reuse.
 P391 Collect spillage.
Storage:
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
Disposal:
 P501 Dispose of contents/ container to an approved waste

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disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical Name	CAS-No.	Concentration (%)
Monoethanolamine	141-43-5	>= 3 - <= 7
4,4'-isopropylidenediphenol	80-05-7	>= 30 - <= 60
Diethylenetriamine	111-40-0	>= 30 - <= 60
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	6864-37-5	>= 13 - <= 30

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
 Consult a physician.
 Show this material safety data sheet to the doctor in attendance.
 Symptoms of poisoning may appear several hours later.
 Do not leave the victim unattended.
- If inhaled : Call a physician or poison control center immediately.
 If unconscious place in recovery position and seek medical advice.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
 Take victim immediately to hospital.
 If on skin, rinse well with water.
 If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
 In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 Continue rinsing eyes during transport to hospital.
 Remove contact lenses.
 Protect unharmed eye.
 Keep eye wide open while rinsing.
 If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
 Do NOT induce vomiting.
 Do not give milk or alcoholic beverages.
 Never give anything by mouth to an unconscious person.
 If symptoms persist, call a physician.
 Take victim immediately to hospital.

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Most important symptoms and effects, both acute and delayed : None known.

Notes to physician : No information available.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : No data is available on the product itself.

Unsuitable extinguishing media : High volume water jet

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

Hazardous combustion products : No data is available on the product itself.

Specific extinguishing methods : No data is available on the product itself.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.

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

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

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

Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapors/dust.

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Avoid exposure - obtain special instructions before use.
 Avoid contact with skin and eyes.
 For personal protection see section 8.
 Smoking, eating and drinking should be prohibited in the application area.
 Provide sufficient air exchange and/or exhaust in work rooms.
 To avoid spills during handling keep bottle on a metal tray.
 Dispose of rinse water in accordance with local and national regulations.
 Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : Prevent unauthorized access.
 Keep container tightly closed in a dry and well-ventilated place.
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.
 Observe label precautions.
 Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : Strong acids
 Strong bases
 Strong oxidizing agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m3	OSHA PEL
Monoethanolamine	141-43-5	TWA	3 ppm	ACGIH
		STEL	6 ppm	ACGIH
		TWA	3 ppm 6 mg/m3	OSHA Z-1
		STEL	6 ppm 15 mg/m3	OSHA PEL
		TWA	3 ppm 8 mg/m3	OSHA PEL

Engineering measures : Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Respiratory protection : In the case of vapor formation use a respirator with an

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approved filter.

Hand protection

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

Solvent-resistant gloves (butyl-rubber)
Nitrile rubber
10 - 480 min

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

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

Skin and body protection

: impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

: Avoid contact with skin, eyes and clothing.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : amber

Odor : amine-like

Odor 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

Initial boiling point and boiling range : No data available

Flash point : > 100 °C
Method: Pensky-Martens closed cup, closed cup

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

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

Upper explosion limit : No data is available on the product itself.

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Lower explosion limit : No data is available on the product itself.

Vapor pressure : No data is available on the product itself.

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

Relative density : 1

Density : 1 g/cm³ (25 °C)

Solubility(ies)

Water solubility : partly soluble (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.

Autoignition temperature : No data is available on the product itself.

Decomposition temperature : > 200 °C

Viscosity

Viscosity, dynamic : 400 mPa.s (25 °C)

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Molecular weight : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous reactions : No decomposition if stored and applied as directed.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : No data available

Hazardous decomposition products : Carbon oxides
Nitrogen oxides (NO_x)
Burning produces obnoxious and toxic fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of : No data is available on the product itself.

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exposure

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : 1,408 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 0.37 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : 926.73 mg/kg
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation**Product:**

Remarks: Extremely corrosive and destructive to tissue.

Serious eye damage/eye irritation**Product:**

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitization**Product:**

Remarks: Causes sensitization.

Assessment: No data available

Germ cell mutagenicity**Ingredients:**

Monoethanolamine:
Genotoxicity in vitro : 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

Metabolic activation: negative
Result: negative

4,4'-isopropylidenediphenol:
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Result: negative

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2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Ingredients:

Monoethanolamine:

Genotoxicity in vivo : Application Route: Oral
Exposure time: 24 h
Dose: 375 - 1500 mg/kg
Method: OECD Test Guideline 474
Result: negative

4,4'-isopropylidenediphenol:

Genotoxicity in vivo : Method: OECD Test Guideline 474
Result: negative

Diethylenetriamine:

Genotoxicity in vivo : Cell type: Somatic
Application Route: Oral
Dose: 85 - 850 mg/kg
Method: OECD Test Guideline 474
Result: negative

Application Route: Oral
Result: negative

Carcinogenicity**Ingredients:**

4,4'-isopropylidenediphenol:

Species: Rat, (male and female)
Application Route: Oral
Exposure time: 103 weeks
Frequency of Treatment: 7 daily
Result: negative

Diethylenetriamine:

Species: Mouse, (male)
Application Route: Dermal
Dose: 56.3 mg/kg
Frequency of Treatment: 3 daily
Result: negative

Carcinogenicity - Assessment : No data available

IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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OSHA No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity**Ingredients:**

Monoethanolamine:
Effects on fertility

: Species: Rat, male and female
Application Route: Oral
Target Organs: Reproductive organs
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

4,4'-isopropylidenediphenol:

Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: Embryotoxic effects and adverse effects on the offspring were detected.

Diethylenetriamine:

Species: Rat, male and female
Application Route: Oral
General Toxicity Parent: NOAEL (No observed adverse effect level): 30 mg/kg wet weight
Method: OECD Test Guideline 421

Ingredients:

Monoethanolamine:
Effects on fetal development

: Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL (No observed adverse effect level): 120 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects.

Species: Rat
Application Route: Dermal
General Toxicity Maternal: NOAEL (No observed adverse effect level): 75 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects.

4,4'-isopropylidenediphenol:

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: NOAEL (No observed adverse effect level): < 160 mg/kg body weight

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Method: OECD Test Guideline 416
Result: No teratogenic effects.

Diethylenetriamine:

Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL (No observed adverse effect level): 100 mg/kg body weight
Method: OECD Test Guideline 421

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL (No observed adverse effect level): 5 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects.

Ingredients:

4,4'-isopropylidenediphenol:
Reproductive toxicity -
Assessment

: Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT-single exposure**Ingredients:**

Monoethanolamine:
Routes of exposure: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

4,4'-isopropylidenediphenol:

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Diethylenetriamine:

Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

STOT-repeated exposure

No data available

Repeated dose toxicity**Ingredients:**

Monoethanolamine:
Species: Rat, male and female
NOEC: 300 mg/m³
Application Route: Ingestion
Test atmosphere: vapor
Exposure time: 672 h

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Number of exposures: 7 d
Method: OECD Test Guideline 412

4,4'-isopropylidenediphenol:
Species: Dog, male and female
NOEC: 75 mg/kg, 10 mg/m³
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 2,160 h
Number of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
LOAEL (Lowest observed adverse effect level): 600 mg/kg
Application Route: Ingestion
Exposure time: 672 h
Number of exposures: 7 d
Method: Subchronic toxicity

Diethylenetriamine:
Species: Rat, male and female
NOEC: 70 - 80 mg/m³
Application Route: Ingestion
Test atmosphere: vapor
Exposure time: 360 h
Number of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOAEL (No observed adverse effect level): 114 mg/kg/d
Application Route: Skin contact
Exposure time: 9,600 h
Number of exposures: 6 d
Method: Chronic toxicity

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
Species: Rat, male and female
NOEC: 2.5 mg/kg, 12 mg/m³
Application Route: Ingestion
Test atmosphere: vapor
Exposure time: 2,160 h
Number of exposures: 5 d
Method: OECD Test Guideline 413

Repeated dose toxicity - : No data available
Assessment

Aspiration toxicity

No data available

Experience with human exposure

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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**Product:**

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Ingredients:**

Monoethanolamine:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 349 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water

4,4'-isopropylidenediphenol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 7.5 mg/l
Exposure time: 96 h

Diethylenetriamine:

Toxicity to fish : LC50: 430 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Toxicity to fish : LC50: 31.6 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38412

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Ingredients:

Monoethanolamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 65 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.2.

4,4'-isopropylidenediphenol:

Toxicity to daphnia and other aquatic invertebrates : EC50: 3.9 - 10.2 mg/l
 Exposure time: 48 h

(Ceriodaphnia dubia (Water flea)):

Diethylenetriamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 32 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Toxicity to daphnia and other aquatic invertebrates : EC50: 4.6 mg/l
 Exposure time: 48 h
 Test substance: Fresh water
 Method: OECD Test Guideline 202

Ingredients:

Monoethanolamine:

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 2.5 mg/l
 Exposure time: 72 h
 Test substance: Fresh water
 Method: OECD Test Guideline 201

4,4'-isopropylidenediphenol:

Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 2.5 - 3.1 mg/l
 Exposure time: 96 h

Diethylenetriamine:

Toxicity to algae : EbC50 (Selenastrum capricornutum (green algae)): 1,164 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Toxicity to algae : EC50: > 5 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

M-Factor (Acute aquatic) : No data available

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toxicity)

Ingredients:

Monoethanolamine:

Toxicity to fish (Chronic toxicity) : NOEC (Oryzias latipes (Orange-red killifish)): 1.2 mg/l
Exposure time: 30 d
Test substance: Fresh water
Method: OECD Test Guideline 210

4,4'-isopropylidenediphenol:

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.016 mg/l
Exposure time: 444 d
Test Type: flow-through test
Test substance: Fresh water
Method: Fish Life Cycle Toxicity
Remarks: Toxic to aquatic organisms.

Diethylenetriamine:

Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l
Exposure time: 28 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 210

Ingredients:

Monoethanolamine:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.85 mg/l
Exposure time: 21 d
Test substance: Fresh water
Method: OECD Test Guideline 211

Diethylenetriamine:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 5.6 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.20.

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 4 mg/l
Exposure time: 21 d

M-Factor (Chronic aquatic toxicity) : No data available

Ingredients:

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):

Toxicity to bacteria : EC50: 96 mg/l
Exposure time: 17 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

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Ingredients:

Diethylenetriamine:
Toxicity to soil dwelling organisms : 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

Ingredients:

Monoethanolamine:
Acute aquatic toxicity : Harmful to aquatic life.

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

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
Acute aquatic toxicity : This product has no known ecotoxicological effects.

Ingredients:

4,4'-isopropylidenediphenol:
Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Further information:
No data available

Persistence and degradability**Ingredients:**

Monoethanolamine:
Biodegradability : Inoculum: activated sludge
Concentration: 20 mg/l
Result: Readily biodegradable.
Biodegradation: > 90 %
Exposure time: 21 d
Method: OECD Test Guideline 301A

4,4'-isopropylidenediphenol:
Biodegradability : Result: Not readily biodegradable.
Biodegradation: 1 - 2 %
Exposure time: 28 d

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Diethylenetriamine:
Biodegradability : Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 87 %
Exposure time: 21 d
Method: OECD Test Guideline 301D

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
Biodegradability : Inoculum: activated sludge
Result: Not biodegradable.
Biodegradation: < 1 %
Exposure time: 28 d
Method: OECD Test Guideline 302B

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

Ingredients:

Monoethanolamine:
Photodegradation : Test Type: Air
Rate constant: 35.844
Degradation (direct photolysis): 50 %

Diethylenetriamine:
Photodegradation : Test Type: Air
Rate constant: 500000
Degradation (direct photolysis): 50 %

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Ingredients:**

Diethylenetriamine:
Bioaccumulation : Species: Cyprinus carpio (Carp)

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Bioconcentration factor (BCF): 0.3 - 6.3
 Exposure time: 42 d
 Test substance: Fresh water
 Method: flow-through test
 Remarks: Bioaccumulation is unlikely.

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
 Bioaccumulation : Species: Cyprinus carpio (Carp)
 Bioconcentration factor (BCF): < 60
 Exposure time: 28 d
 Test substance: Fresh water
 Method: flow-through test
 Remarks: Does not bioaccumulate.

Ingredients:

Monoethanolamine:
 Partition coefficient: n-octanol/water : log Pow: -1.31 (25 °C)

Diethylenetriamine:
 Partition coefficient: n-octanol/water : log Pow: -1.58 (20 °C)
 pH: 7

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
 Partition coefficient: n-octanol/water : log Pow: 2.3 (23 °C)
 pH: 10
 Method: OECD Test Guideline 107

Mobility in soil

Mobility : No data available

Ingredients:

Monoethanolamine:
 Distribution among environmental compartments : Koc: 1.167.
 Diethylenetriamine:
 Distribution among environmental compartments : Koc: 19111.
 2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine):
 Distribution among environmental compartments : Koc: 1195.
 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

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Adsorbed organic bound halogens (AOX) : No data available

Hazardous to the ozone layer

Ozone-Depletion Potential : Not applicable

Additional ecological information - Product : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION**International Regulation****IATA**

UN/ID No. : UN 2922
Proper shipping name : Corrosive liquid, toxic, n.o.s.
(DIETHYLENE TRIAMINE, CYCLOALIPHATIC POLYAMINE)
Class : 8
Subsidiary risk : 6.1
Packing group : II
Labels : Corrosive, Toxic
Packing instruction (cargo aircraft) : 855
Packing instruction (passenger aircraft) : 851

IMDG

UN number : UN 2922
Proper shipping name : CORROSIVE LIQUID, TOXIC, N.O.S.
(DIETHYLENE TRIAMINE, CYCLOALIPHATIC POLYAMINE)

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Class	: 8
Subsidiary risk	: 6.1
Packing group	: II
Labels	: 8 (6.1)
EmS Code	: F-A, S-B
Marine pollutant	: yes

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

Not applicable for product as supplied.

Domestic regulation**DOT Classification**

UN/ID/NA number	: UN 2922
Proper shipping name	: CORROSIVE LIQUIDS, TOXIC, N.O.S. (DIETHYLENE TRIAMINE, CYCLOALIPHATIC POLYAMINE)
Class	: 8
Subsidiary risk	: 6.1
Packing group	: II
Labels	: CORROSIVE, POISON
ERG Code	: 154
Marine pollutant	: yes(4,4'-ISOPROPYLIDENEDIPHENOL, 2,2'-DIMETHYL- 4,4'METHYLENEBIS(CYCLOHEXYLAMINE))

SECTION 15. REGULATORY INFORMATION

TSCA - 5(a) Significant New Use Rule List of Chemicals : Not relevant

California Prop 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

2,2'-iminodiethanol	111-42-2
4,4'-methylenedi-o-toluidine	838-88-0

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

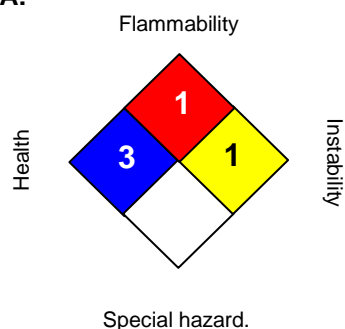
4,4'-isopropylidenediphenol	80-05-7
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The ingredients of this product are reported in the following inventories:

CH INV	: The mixture contains substances listed on the Swiss Inventory
TSCA	: On TSCA Inventory
DSL	: All components of this product are on the Canadian DSL.
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
ISHL	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

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SECTION 16. OTHER INFORMATION**Further information****NFPA:****HMIS III:**

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	1

0 = not significant, 1 =Slight,

2 = Moderate, 3 = High

4 = Extreme, * = Chronic

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