

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

HUNTSMAN

Enriching lives through innovation

EPOCAST® 1629 A US

Version	Revision Date:	SDS Number:	Date of last issue: 08/03/2018
1.3	02/12/2024	400001012916	Date of first issue: 08/15/2017

Print Date 07/08/2025

SECTION 1. IDENTIFICATION

Product name : EPOCAST® 1629 A 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 : Global_Product_EHS_AdMat@huntsman.com
Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Adhesives

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin irritation : Category 2
Serious eye damage : Category 1
Skin sensitisation : Category 1
Short-term (acute) aquatic hazard : Category 2
Long-term (chronic) aquatic hazard : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

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Precautionary statements : **Prevention:**
P261 Avoid breathing dust.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
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:
Not available
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

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	50 - 70
Glass, oxide, chemicals	65997-17-3	20 - 30
Dialkyl alkyl phosphonate	Not Assigned	5 - 10
p-tert-butylphenyl 1-(2,3-epoxy)propyl ether	3101-60-8	1 - 5
1,4-bis(2,3-epoxypropoxy)butane	2425-79-8	1 - 5
silicon dioxide	7631-86-9	0.1 - 1

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

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Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

SECTION 4. FIRST AID MEASURES

- | | |
|---|---|
| General advice | : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur. |
| If inhaled | : If inhaled, remove to fresh air.
Get medical attention if symptoms occur. |
| 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 | : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist. |
| If swallowed | : Keep respiratory tract clear.
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 | : Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage. |
| Protection of first-aiders | : First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : Treat symptomatically. |

SECTION 5. FIREFIGHTING MEASURES

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- | | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray
Alcohol-resistant foam
Carbon dioxide (CO ₂)
Dry chemical |
| Unsuitable extinguishing media | : | Exercise caution when using a high volume water jet as it may scatter and spread fire |
| Specific hazards during firefighting | : | Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : | Carbon oxides
Phenolics |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Further information | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : | 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.
Avoid dust formation.
Avoid breathing dust.
Refer to protective measures listed in sections 7 and 8. |
| 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 | : | Keep in suitable, closed containers for disposal. |

SECTION 7. HANDLING AND STORAGE

- | | | |
|---|---|--|
| Advice on protection against fire and explosion | : | Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed. |
| Advice on safe handling | : | Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
Persons suffering from asthma, eczema or skin problems |

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should avoid contact, including dermal contact, with this product.
Avoid formation of respirable particles.
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.

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.
Keep in properly labelled containers.

Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature : 36 - 104 °F / 2 - 40 °C

Further information on storage stability : Stable under normal conditions.

Stable under normal conditions.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
silicon dioxide	7631-86-9	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3
		TWA (Respirable dust)	0.05 mg/m3 (Silica)	NIOSH REL
		TWA	6 mg/m3 (Silica)	NIOSH REL
		PEL (respirable)	0.05 mg/m3	OSHA CARC

Personal protective equipment

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Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
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 : 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, solid
Colour	: white
Odour	: slight
Odour Threshold	: No data is available on the product itself.
pH	: substance/mixture is non-soluble (in water)
Melting point/freezing point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 203 °F / > 95 °C Method: estimated, closed cup

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Evaporation rate	: < 1
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: < 1.333 hPa (68 °F / 20 °C)
Relative vapour density	: 1
Relative density	: No data is available on the product itself.
Density	: 0.58 g/cm3
Solubility(ies)	
Water solubility	: No data is available on the product itself.
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	: No data is available on the product itself.
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.
Particle size	: No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Dust may form explosive mixture in air.

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Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified due to lack of data.

Product:

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

Acute inhalation toxicity : Acute toxicity estimate: 39.06 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

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

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Glass, oxide, chemicals:

Acute inhalation toxicity : Assessment: The substance or mixture has no acute inhalation toxicity

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 425
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal

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toxicity

1,4-bis(2,3-epoxypropoxy)butane:

Acute oral toxicity	: LD50 (Rat, male and female): 1,163 mg/kg Method: OECD Test Guideline 401 GLP: yes Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	: LC50 (Rat): > 2.068 mg/l Exposure time: 4 h Test atmosphere: dust/mist Test atmosphere: dust/mist Method: Expert judgement Assessment: The component/mixture is moderately toxic after short term inhalation., The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations.
Acute dermal toxicity	: Acute toxicity estimate: 1,100 mg/kg Method: Converted acute toxicity point estimate Assessment: The component/mixture is moderately toxic after single contact with skin.

silicon dioxide:

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	: LC50 (Rat, male and female): > 58.8 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403
Acute dermal toxicity	: LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species	: Rabbit
Exposure time	: 4 h
Assessment	: Irritating to skin.
Method	: OECD Test Guideline 404
Result	: Irritating to skin.

Glass, oxide, chemicals:

Species	: Rabbit
Assessment	: No skin irritation
Method	: OECD Test Guideline 404

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Result : Normally reversible injuries

Dialkyl alkyl phosphonate:

Assessment : Irritating to skin.

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Species : Rat
Assessment : No skin irritation
Method : OECD Test Guideline 402
Result : No skin irritation

1,4-bis(2,3-epoxypropoxy)butane:

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

silicon dioxide:

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

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species : Rabbit
Result : Irritating to eyes.
Assessment : Irritating to eyes.
Method : OECD Test Guideline 405

Dialkyl alkyl phosphonate:

Assessment : Irritating to eyes.

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Species : Rabbit
Result : No eye irritation
Assessment : No eye irritation
Method : OECD Test Guideline 405

1,4-bis(2,3-epoxypropoxy)butane:

Species : Rabbit
Assessment : Risk of serious damage to eyes.
Method : OECD Test Guideline 405
GLP : yes

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silicon dioxide:

Species	:	Rabbit
Result	:	No eye irritation
Assessment	:	No eye irritation
Method	:	OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Test Type	:	Local lymph node assay (LLNA)
Exposure routes	:	Skin
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	The product is a skin sensitiser, sub-category 1B.

Glass, oxide, chemicals:

Exposure routes	:	Skin
Species	:	Other
Result	:	Does not cause skin sensitisation.

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Exposure routes	:	Skin
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	The product is a skin sensitiser, sub-category 1A.

1,4-bis(2,3-epoxypropoxy)butane:

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

Assessment	:	Harmful if inhaled.
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Germ cell mutagenicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Genotoxicity in vitro	:	Test Type: In vitro mammalian cell gene mutation test
		Test system: mouse lymphoma cells
		Metabolic activation: without metabolic activation

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Result: positive

Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

Genotoxicity in vivo

: Test Type: in vivo assay
Species: Mouse (male)
Cell type: Germ
Application Route: Oral
Dose: 3333, 10000 mg/kg
Result: negative

Test Type: gene mutation test
Species: Rat (male)
Cell type: Somatic
Application Route: Oral
Dose: 50,250,500,1000 mg/kg bw/day
Method: OECD Test Guideline 488
Result: negative

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Genotoxicity in vitro

: Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Concentration: 50 ug/plate
Metabolic activation: negative
Method: OECD Test Guideline 473
Result: positive

Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive

1,4-bis(2,3-epoxypropoxy)butane:

Genotoxicity in vitro

: Test Type: reverse mutation assay
Concentration: 10 - 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
GLP: yes
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Concentration: 1 - 100 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473

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Result: positive
GLP: yes
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: positive
GLP: no
Remarks: Not classified due to data which are conclusive although insufficient for classification.

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male)
Cell type: Somatic
Application Route: Oral
Exposure time: 4 d
Dose: 187.5 - 750 mg/kg
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Test Type: unscheduled DNA synthesis assay
Species: Rat
Cell type: Liver cells
Application Route: Oral
Method: OECD Test Guideline 486
Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen., Animal testing did not show any mutagenic effects.

silicon dioxide:

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 476
Result: negative

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

Genotoxicity in vivo : Application Route: Inhalation
Dose: 50 mg/m3
Result: negative

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Carcinogenicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species	: Rat, male
Application Route	: Oral
Exposure time	: 24 month(s)
Dose	: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	: 7 days/week
NOAEL	: 15 mg/kg bw/day
Method	: OECD Test Guideline 453
Result	: negative
Target Organs	: Digestive organs

Species	: Mouse, male
Application Route	: Dermal
Exposure time	: 24 month(s)
Dose	: 0, 0.1, 10, 100 mg/kg bw/day
Frequency of Treatment	: 3 days/week
NOEL	: 0.1 mg/kg body weight
Method	: OECD Test Guideline 453
Result	: negative
Target Organs	: Digestive organs

Species	: Rat, female
Application Route	: Dermal
Exposure time	: 24 month(s)
Dose	: 0.1, 100, 1000 mg/kg bw/day
Frequency of Treatment	: 5 days/week
NOEL	: 100 mg/kg body weight
Method	: OECD Test Guideline 453
Result	: negative

Species	: Rat, female
Application Route	: Oral
Exposure time	: 24 month(s)
Dose	: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	: 7 days/week
NOAEL	: 100 mg/kg bw/day
Method	: OECD Test Guideline 453
Result	: negative
Target Organs	: Digestive organs

Species	: Rat, females
Application Route	: Oral
Exposure time	: 24 month(s)
Dose	: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment	: 7 days/week
NOEL	: 2 mg/kg bw/day
Method	: OECD Test Guideline 453
Result	: negative
Target Organs	: Digestive organs

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silicon dioxide:

Species	: Rat, male and female
Application Route	: Oral
Exposure time	: 103 weeks
Dose	: 1800 - 3200 mg/kg
Frequency of Treatment	: 7 daily
Method	: OECD Test Guideline 453
Result	: negative

IARC

Group 1: Carcinogenic to humans silicon dioxide (Silica dust, crystalline)	7631-86-9
Group 2A: Probably carcinogenic to humans Glass, oxide, chemicals (glass)	65997-17-3
Group 2B: Possibly carcinogenic to humans Glass, oxide, chemicals (special-purpose fibres)	65997-17-3

OSHA

OSHA specifically regulated carcinogen silicon dioxide (crystalline silica)	7631-86-9
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NTP

Known to be human carcinogen silicon dioxide (Silica, Crystalline (Respirable Size))	7631-86-9
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Reproductive toxicity

Not classified due to lack of data.

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Effects on fertility	: Test Type: Two-generation study Species: Rat, male and female Application Route: Oral Dose: 0, 50, 180, 540 or 750 milligram per kilogram Duration of Single Treatment: 238 d Frequency of Treatment: 1 daily General Toxicity - Parent: NOEL: 540 mg/kg body weight General Toxicity F1: NOEL: 750 mg/kg body weight Symptoms: No adverse effects Method: OECD Test Guideline 416 Result: No effects on fertility and early embryonic development were detected.
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Effects on foetal development	: Species: Rabbit, female Application Route: Dermal Dose: 0, 30, 100 or 300 milligram per kilogram Duration of Single Treatment: 28 d Frequency of Treatment: 1 daily General Toxicity Maternal: NOAEL: 30 mg/kg body weight Developmental Toxicity: NOAEL: 300 mg/kg body weight
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Method: Other guidelines
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit, female
Application Route: Oral
Dose: 0, 20, 60 or 180 milligram per kilogram
Duration of Single Treatment: 13 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 60 mg/kg body weight
Developmental Toxicity: NOAEL: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rat, female
Application Route: Oral
Dose: 0, 60, 180 and 540 milligram per kilogram
Duration of Single Treatment: 10 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: NOAEL: 180 mg/kg body weight
Developmental Toxicity: NOAEL: > 540 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

1,4-bis(2,3-epoxypropoxy)butane:

Effects on foetal development : Test Type: Pre-natal
Species: Rat, female
Application Route: Oral
Dose: 0/30/100/300 mg/kg bw/day
Duration of Single Treatment: 17 d
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Developmental Toxicity: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

silicon dioxide:

Effects on foetal development : Species: Mouse
Application Route: Oral
General Toxicity Maternal: NOAEL: 1,340 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 1,600 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat
Application Route: Oral

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General Toxicity Maternal: NOAEL: 1,350 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Species	: Rat, male and female
NOAEL	: 50 mg/kg
Application Route	: oral (gavage)
Exposure time	: 14 Weeks
Number of exposures	: 7 d
Dose	: 0, 50, 250, 1000 mg/kg/day
Method	: OECD Test Guideline 408

Species	: Rat, male and female
NOAEL	: >= 10 mg/kg
Application Route	: Skin contact
Exposure time	: 13 Weeks
Number of exposures	: 5 d
Dose	: 0, 10, 100, 1000 mg/kg/day
Method	: OECD Test Guideline 411

Species	: Mouse, male
NOAEL	: 100 mg/kg
Application Route	: Skin contact
Exposure time	: 13 Weeks
Number of exposures	: 3 d
Dose	: 0, 1, 10, 100 mg/kg/day
Method	: OECD Test Guideline 411

Glass, oxide, chemicals:

Species	: Rat, male
LOEC	: 2.4 mg/m3
Test atmosphere	: dust/mist
Exposure time	: 2,160 h
Number of exposures	: 6 h
Method	: Directive 67/548/EEC, Annex, B.29

1,4-bis(2,3-epoxypropoxy)butane:

Species	: Rat, male and female
NOAEL	: 200 mg/kg
Application Route	: Oral
Exposure time	: 28 d
Number of exposures	: daily

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Dose	:	25, 100, 200, 400 mg/kg
Method	:	Subacute toxicity
Species	:	Rat, male and female
NOAEL	:	263 mg/kg
Application Route	:	Oral
Exposure time	:	90 h
Number of exposures	:	daily
Dose	:	0,30,100,300 mg/kg bw/day
Method	:	OECD Test Guideline 408
GLP	:	yes
Remarks	:	Information given is based on data obtained from similar substances.

Repeated dose toxicity - Assessment	:	Harmful if inhaled.
-------------------------------------	---	---------------------

silicon dioxide:

Species	:	Rat, male and female
NOEC	:	4000 - 4500 mg/m3
Application Route	:	Ingestion
Test atmosphere	:	dust/mist
Exposure time	:	13 Weeks
Number of exposures	:	7 d
Method	:	OECD Test Guideline 413

Aspiration toxicity

Not classified due to lack of data.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l
		Exposure time: 96 h
		Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1.8 mg/l
		Exposure time: 48 h

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	Test Type: static test
	Test substance: Fresh water
	Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: EC50: 11 mg/l
	Exposure time: 72 h
	Test Type: static test
	Test substance: Fresh water
	Method: EPA-660/3-75-009
	NOEC: 4.2 mg/l
	Exposure time: 72 h
	Test Type: static test
	Test substance: Fresh water
	Method: EPA-660/3-75-009
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
Toxicity to microorganisms	: IC50 (activated sludge): > 100 mg/l
	Exposure time: 3 h
	Test Type: static test
	Test substance: Fresh water

Ecotoxicology Assessment

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

Glass, oxide, chemicals:

Toxicity to fish	: LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
	Exposure time: 96 h
	Test Type: Other guidelines
	Test substance: Fresh water
	Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
	Exposure time: 72 h
	Test Type: semi-static test
	Test substance: Fresh water
	Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	: EgC50 (Selenastrum capricornutum (green algae)): > 1,000 mg/l
	Exposure time: 72 h
	Test Type: semi-static test
	Method: OECD Test Guideline 201

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

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

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Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): ca. 67.9 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EbC50 (Selenastrum capricornutum (green algae)): ca. 9 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50: > 1,000 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

1,4-bis(2,3-epoxypropoxy)butane:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 24 mg/l
End point: mortality
Exposure time: 96 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 203
GLP: no

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 75 mg/l
End point: Immobilization
Exposure time: 24 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 202
GLP: no

Toxicity to algae/aquatic plants : EL50 (Pseudokirchneriella subcapitata (green algae)): > 160 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOELR (Pseudokirchneriella subcapitata (green algae)): 40 mg/l
Exposure time: 72 h
Test Type: static test

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Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: OECD Test Guideline 209
GLP: no

silicon dioxide:

Toxicity to fish : LL50 (Brachydanio rerio (zebrafish)): > 10,000 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): >= 1,000 mg/l
Exposure time: 24 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EL50 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Persistence and degradability

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

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

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

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 5 mg/l
Result: Not readily biodegradable.
Biodegradation: ca. 1.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

Stability in water : Degradation half life (DT50): ca. 17 d (25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): ca. 7.98 d (25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life (DT50): ca. 10.8 d (25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

1,4-bis(2,3-epoxypropoxy)butane:

Biodegradability : aerobic
Inoculum: activated sludge
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 43 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

aerobic
Inoculum: Sewage (STP effluent)
Concentration: 20 mg/l
Dissolved organic carbon (DOC)
Result: Not readily biodegradable.
Biodegradation: 38 %
Exposure time: 28 d
Method: OECD Test Guideline 301E
GLP: no

Bioaccumulative potential

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

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Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: OECD Test Guideline 117

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Partition coefficient: n-octanol/water : log Pow: 3.59 (68 °F / 20 °C)
pH: 7
Method: OECD Test Guideline 107

1,4-bis(2,3-epoxypropoxy)butane:

Partition coefficient: n-octanol/water : log Pow: -0.269 (77 °F / 25 °C)
pH: 6.7
Method: OECD Test Guideline 117
GLP: yes

Mobility in soil

Components:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Distribution among environmental compartments : Koc: 445

p-tert-butylphenyl 1-(2,3-epoxy)propyl ether:

Distribution among environmental compartments : OECD Test Guideline 121
Koc: ca. 755, log Koc: ca. 2.88
Method: OECD Test Guideline 121

1,4-bis(2,3-epoxypropoxy)butane:

Distribution among environmental compartments : Koc: 12.59
Method: OECD Test Guideline 121

Other adverse effects

Product:

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

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of contents and container in accordance with all local, regional, national and international regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.

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

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(BISPHENOL A EPOXY RESIN)
Class : 9
Packing group : III
Labels : 9
Environmentally hazardous : no

IATA-DGR

UN/ID No. : UN 3077
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.
(BISPHENOL A EPOXY RESIN)
Class : 9
Packing group : III
Labels : Miscellaneous
Packing instruction (cargo aircraft) : 956
Packing instruction (passenger aircraft) : 956

IMDG-Code

UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(BISPHENOL A EPOXY RESIN)
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

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49 CFR

UN/ID/NA number	: UN 3077
Proper shipping name	: Environmentally hazardous substance, solid, n.o.s. (BISPHENOL A EPOXY RESIN)
Class	: 9
Packing group	: III
Labels	: CLASS 9
ERG Code	: 171
Marine pollutant	: yes

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 311/312 Hazards	: Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitisation
-----------------------------	---

SARA 313	: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
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This product does not contain any hazardous air pollutants (HAP) $\geq 0.1\%$, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61)

California Prop. 65

WARNING: This product can expose you to chemicals including 4,4'-isopropylidenediphenol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

DSL	: All components of this product are on the Canadian DSL
AIIC	: 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	: Not in compliance with the inventory

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TSCA : All substances listed as active on the TSCA inventory

Inventories

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

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

No substances are subject to a Significant New Use Rule.

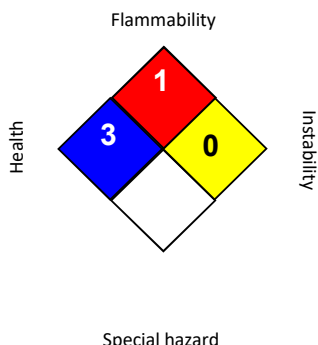
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH		3
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

Revision Date : 02/12/2024

NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA CARC : OSHA Specifically Regulated Chemicals/Carcinogens
OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA CARC / PEL : Permissible exposure limit (PEL)
OSHA Z-3 / TWA : 8-hour time weighted average

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

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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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2.0	07/28/2021	400001012450	Date of first issue: 03/22/2016

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SECTION 1. IDENTIFICATION

Product name : EPOCAST® 1629 B US

Manufacturer or supplier's detailsCompany name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980The Woodlands,
TX 77387
United States of America (USA)

Telephone : Non-Emergency: (800) 257-5547

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

Emergency telephone number : 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 in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin corrosion : Category 1C

Serious eye damage : Category 1

Skin sensitisation : Category 1

Reproductive toxicity : Category 1B

Short-term (acute) aquatic hazard : Category 2

Chronic aquatic toxicity : Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H360F May damage fertility.
H411 Toxic to aquatic life with long lasting effects.

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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.

P264 Wash skin thoroughly after handling.

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.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

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

P363 Wash contaminated clothing 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 : Amines

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Glass, oxide, chemicals	65997-17-3	30 - 50
Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine	68082-29-1	20 - 30
Polyoxypropylenediamine (MW=230)	9046-10-0	5 - 10
Diethylenetriamine	111-40-0	1 - 5

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4,4'-isopropylidenediphenol	80-05-7	1 - 5
silicon dioxide	7631-86-9	1 - 5
Triethylenetetramine	112-24-3	0.1 - 1
Amines, polyethylenepoly-, tetraethylenepentamine fraction	112-57-2	0.1 - 1

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.
 Consult a physician.
 Show this safety data sheet to the doctor in attendance.
 Treat symptomatically.
 Get medical attention if symptoms occur.
- If inhaled : Consult a physician after significant exposure.
 If inhaled, remove to fresh air.
 Get medical attention if symptoms occur.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
 If on skin, rinse well with water.
 If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
 In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 Continue rinsing eyes during transport to hospital.
 Remove contact lenses.
 Keep eye wide open while rinsing.
 If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
 Do NOT induce vomiting.
 Never give anything by mouth to an unconscious person.
 If symptoms persist, call a physician.
 Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
 If potential for exposure exists refer to Section 8 for specific personal protective equipment.
 Avoid inhalation, ingestion and contact with skin and eyes.
 No action shall be taken involving any personal risk or without

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

Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire
- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Carbon oxides
Carbon dioxide (CO₂)
Carbon monoxide
Nitrogen oxides (NO_x)
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for firefighters : 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.
Avoid dust formation.
Avoid breathing dust.
Ensure adequate ventilation.
Refer to protective measures listed in sections 7 and 8.
- 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 : Keep in suitable, closed containers for disposal.

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SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Avoid dust formation.
 Provide appropriate exhaust ventilation at places where dust is formed.
- Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
 Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
 Avoid formation of respirable particles.
 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.
 Provide sufficient air exchange and/or exhaust in work rooms.
 Dispose of rinse water in accordance with local and national regulations.
- 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.
 Keep in properly labelled containers.
- Materials to avoid : For incompatible materials please refer to Section 10 of this SDS.
- Further information on storage stability : Stable under normal conditions.

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

Components	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	NIOSH REL
		TWA	1 ppm 4 mg/m3	OSHA P0
Diethylenetriamine	111-40-0	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m3	NIOSH REL
		TWA	1 ppm 4 mg/m3	OSHA P0
silicon dioxide	7631-86-9	TWA (Dust)	20 Million	OSHA Z-3

SAFETY DATA SHEET

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			particles per cubic foot (Silica)	
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3
		TWA (Respirable dust)	0.05 mg/m3 (Silica)	NIOSH REL
		TWA	6 mg/m3 (Silica)	NIOSH REL
Triethylenetetramine	112-24-3	TWA	1 ppm	US WEEL

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
Dust safety masks are recommended when the dust concentration is more than 10 mg/m3.

Hand protection

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
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 : 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

SAFETY DATA SHEET

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Appearance	: paste
Colour	: light orange
Odour	: ammoniacal
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 is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: 201 °F / 94 °C Method: Pensky-Martens closed cup
Evaporation rate	: < 1
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.
Vapour pressure	: < 1.333 hPa (68 °F / 20 °C)
Relative vapour density	: 1
Relative density	: 0.5
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: slightly soluble
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.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	: No data is available on the product itself.

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

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

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

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Dust may form explosive mixture in air.

Conditions to avoid : None known.

Incompatible materials : None known.

Hazardous decomposition products : No decomposition if stored and applied as directed.

Hazardous decomposition products : carbon dioxide
carbon monoxide
Nitrogen oxides (NOx)

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: 6.12 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
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**Components:**

Glass, oxide, chemicals:

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Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Normally reversible injuries

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:
Species: human skin
Method: OECD Test Guideline 431
Result: Non-corrosive

Species: human skin
Exposure time: 1 h
Assessment: Irritating to skin.
Method: OECD Test Guideline 439
Result: irritating

Polyoxypropylenediamine (MW=230):
Species: Rabbit
Assessment: Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.
Method: OECD Test Guideline 404
Result: Corrosive after 1 to 4 hours of exposure

Diethylenetriamine:
Species: Rabbit
Assessment: Causes burns.
Result: Causes burns.

4,4'-isopropylidenediphenol:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

silicon dioxide:
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

Triethylenetetramine:
Species: Rabbit
Assessment: Causes burns.
Method: OECD Test Guideline 404
Result: Causes burns.

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

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Species: Rabbit
Result: Severe eye irritation
Assessment: Risk of serious damage to eyes.
Method: OECD Test Guideline 405

Polyoxypropylenediamine (MW=230):
Species: Rabbit
Result: Irreversible effects on the eye
Assessment: Risk of serious damage to eyes.
Method: OECD Test Guideline 405

Diethylenetriamine:
Species: Rabbit
Result: Corrosive
Assessment: Corrosive

4,4'-isopropylidenediphenol:
Species: Rabbit
Result: Irreversible effects on the eye
Method: OECD Test Guideline 405

silicon dioxide:
Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

Triethylenetetramine:
Species: Rabbit
Result: Corrosive
Assessment: Corrosive
Method: OECD Test Guideline 405

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Species: Rabbit
Result: Risk of serious damage to eyes.
Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Components:**

Glass, oxide, chemicals:
Exposure routes: Skin
Species: Other
Result: Does not cause skin sensitisation.

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Species: Mouse
Method: OECD Test Guideline 429
Result: Probability or evidence of high skin sensitisation rate in humans

Polyoxypropylenediamine (MW=230):
Exposure routes: Skin

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Species: Not Assigned
Result: No data available

Exposure routes: Respiratory Tract
Species: Not Assigned
Result: No data available

Diethylenetriamine:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
Remarks: Causes sensitisation.

Exposure routes: Respiratory Tract
Species: Mouse
Result: Does not cause respiratory sensitisation.

4,4'-isopropylidenediphenol:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

Exposure routes: Skin
Species: Humans
Assessment: May cause sensitisation by skin contact.
Result: Causes sensitisation.

Triethylenetetramine:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Components:

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Assessment: May cause an allergic skin reaction.

Germ cell mutagenicity**Components:**

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Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

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

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

Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Polyoxypropylenediamine (MW=230):

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

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

Test Type: gene mutation test
Result: negative
GLP: yes

4,4'-isopropylidenediphenol:

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

silicon dioxide:

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 476
Result: negative

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

Triethylenetetramine:

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

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Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: positive

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

Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Components:

Polyoxypropylenediamine (MW=230):

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Cell type: Bone marrow
Application Route: Oral
Dose: 125/250/500 mg/kg bw/day
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

4,4'-isopropylidenediphenol:

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

silicon dioxide:

Genotoxicity in vivo : Application Route: Inhalation
Dose: 50 mg/m³
Result: negative

Triethylenetetramine:

Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Genotoxicity in vivo : Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative

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Components:

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Germ cell mutagenicity- : In vitro tests did not show mutagenic effects
Assessment

Carcinogenicity**Components:**

Diethylenetriamine:

Species: Mouse, male

Application Route: Dermal

Dose: 56.3 mg/kg

Frequency of Treatment: 3 daily

Result: negative

4,4'-isopropylidenediphenol:

Species: Rat, male and female

Application Route: Oral

Exposure time: 103 weeks

Frequency of Treatment: 7 daily

Result: negative

silicon dioxide:

Species: Rat, male and female

Application Route: Oral

Exposure time: 103 weeks

Dose: 1800 - 3200 mg/kg

Frequency of Treatment: 7 daily

Method: OECD Test Guideline 453

Result: negative

Triethylenetetramine:

Species: Mouse, male

Application Route: Dermal

Dose: 42 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 451

Result: negative

Species: Mouse, male

Application Route: Dermal

Exposure time: 104 weeks

Dose: 16.8 mg/kg

Frequency of Treatment: 3 days/week

Method: OECD Test Guideline 451

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Species: Mouse, male

Application Route: Dermal

Exposure time: 627 days

Dose: >= 42 mg/kg

Frequency of Treatment: 3 daily

Method: OECD Test Guideline 451

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Result: negative

Carcinogenicity -
Assessment : No data available**IARC**

Group 1: Carcinogenic to humans
silicon dioxide
(Silica dust, crystalline)
Group 2A: Probably carcinogenic to humans
Glass, oxide, chemicals
(glass)
Group 2B: Possibly carcinogenic to humans
Glass, oxide, chemicals
(special-purpose fibres)

ACGIH

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

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

Known to be human carcinogen
silicon dioxide
(Silica, Crystalline (Respirable Size))

Reproductive toxicity**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 100, 300, 1000 mg/kg bw/d
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No observed adverse effect level:
1,000 mg/kg body weight
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.

Polyoxypropylenediamine (MW=230):

Test Type: Reproduction / Developmental Toxicity Screening
Test
Species: Rat, male and female
Application Route: Dermal
Dose: 3/10/30 milligram per kilogram
General Toxicity - Parent: No observed adverse effect level:
30 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 30
mg/kg body weight
Method: OECD Test Guideline 421
Result: Animal testing did not show any effects on fertility.

Species: Rat, male and female
Application Route: Oral

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Dose: 0/50/150/450 milligram per kilogram
General Toxicity - Parent: No observed adverse effect level:
150 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 150
mg/kg body weight
Method: OECD Test Guideline 443

Diethylenetriamine:

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

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.

Components:**Polyoxypropylenediamine (MW=230):**

Effects on foetal development : Test Type: Pre-natal
Species: Rabbit, female
Application Route: Oral
Dose: 15/50/115 milligram per kilogram
Duration of Single Treatment: 23 d
General Toxicity Maternal: No observed adverse effect level:
50 mg/kg body weight
Developmental Toxicity: No observed adverse effect level:
115 mg/kg body weight
Method: OECD Test Guideline 414

Diethylenetriamine:

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

4,4'-isopropylidenediphenol:

Species: Rat, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
< 160 mg/kg body weight
Method: OECD Test Guideline 416
Result: No teratogenic effects

silicon dioxide:

Species: Mouse
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
1,340 mg/kg body weight
Method: OECD Test Guideline 414

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Result: No teratogenic effects

Species: Rabbit
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
1,600 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
1,350 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Triethylenetetramine:

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
> 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

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

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Species: Rabbit, female
Application Route: Dermal
General Toxicity Maternal: No-observed-effect level: 50 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:
750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Components:

4,4'-isopropylidenediphenol:
Reproductive toxicity -
Assessment

: Clear evidence of adverse effects on sexual function and
fertility, based on animal experiments.

STOT - single exposure**Components:**

Diethylenetriamine:

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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.

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:**

Glass, oxide, chemicals:

Species: Rat, male

LOEC: 2.4 mg/m3

Test atmosphere: dust/mist

Exposure time: 2,160 h

Number of exposures: 6 h

Method: Directive 67/548/EEC, Annex, B.29

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Species: Rat, male and female

NOAEL: 1000 mg/kg

NOAEL: 1,000 mg/kg

Application Route: Oral

Exposure time: 14 days

Number of exposures: Once daily

Dose: 0, 100, 300, 1000 mg/kg bw/d

Control Group: yes

Method: OECD Test Guideline 422

Target Organs: Liver

Polyoxypropylenediamine (MW=230):

Species: Rat, male and female

NOAEL: >= 250 mg/kg/d

Application Route: Dermal

Exposure time: 90 days 6 h

Number of exposures: 5 d

Dose: 0/50/80/250 mg/kg bw/day

Method: OECD Test Guideline 411

Diethylenetriamine:

Species: Rat, male and female

NOEC: 70 - 80 mg/m3

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 360 h

Number of exposures: 7 d

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Method: Subchronic toxicity

Species: Rat, male and female
NOAEL: 114 mg/kg/d
Application Route: Skin contact
Exposure time: 9,600 h
Number of exposures: 6 d
Method: Chronic toxicity

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: 600 mg/kg
Application Route: Ingestion
Exposure time: 672 h
Number of exposures: 7 d
Method: Subchronic toxicity

silicon dioxide:
Species: Rat, male and female
NOEC: 4000 - 4500 mg/m³
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 13 Weeks
Number of exposures: 7 d
Method: OECD Test Guideline 413

Triethylenetetramine:
Species: Rat, male and female
NOAEL: 50 mg/kg/d
Application Route: Ingestion
Exposure time: 26 Weeks
Number of exposures: 7 d
Method: Subchronic toxicity

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Species: Rat, male and female
NOAEL: 50 mg/kg/d
Application Route: Ingestion
Exposure time: 4,368 h
Method: Subchronic toxicity

Species: Rabbit, male and female
NOAEL: 50 mg/kg/d
Application Route: Skin contact

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Exposure time: 744 h
Number of exposures: 5 d
Method: Subacute toxicity

Components:

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:
Repeated dose toxicity - : No adverse effect has been observed in chronic toxicity
Assessment tests.

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available

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

Glass, oxide, chemicals:
Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
Exposure time: 96 h
Test Type: Other guidelines
Test substance: Fresh water
Method: OECD Test Guideline 203

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Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 7.07 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Polyoxypropylenediamine (MW=230):

Toxicity to fish : EC50 (Oncorhynchus mykiss (rainbow trout)): > 15 mg/l
End point: mortality
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 203

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.

4,4'-isopropylidenediphenol:

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

silicon dioxide:

Toxicity to fish : LL50 (Brachydanio rerio (zebrafish)): > 10,000 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Triethylenetetramine:

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

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 420 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.

Components:

Glass, oxide, chemicals:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

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Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.07 mg/l
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202

Polyoxypropylenediamine (MW=230):

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 80 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

Diethylenetriamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 64.6 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Regulation (EC) No. 440/2008, Annex, C.2

EC50 (Daphnia magna (Water flea)): 16 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: DIN 38412

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)):

silicon dioxide:

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): >= 1,000 mg/l
 Exposure time: 24 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

Triethylenetetramine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 31.1 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Directive 67/548/EEC, Annex V, C.2.

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 24.1 mg/l
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: Tested according to Annex V of Directive 67/548/EEC.

Components:

Glass, oxide, chemicals:

Toxicity to algae/aquatic : EgC50 (Selenastrum capricornutum (green algae)): > 1,000

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plants mg/l
 Exposure time: 72 h
 Test Type: semi-static test
 Method: OECD Test Guideline 201

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 4.34 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

EC10 (Selenastrum capricornutum (green algae)): 1.78 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201

Polyoxypropylenediamine (MW=230):

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 15 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

Diethylenetriamine:

Toxicity to algae/aquatic plants : 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

4,4'-isopropylidenediphenol:

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

silicon dioxide:

Toxicity to algae/aquatic plants : EL50 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l
 Exposure time: 72 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 201

Triethylenetetramine:

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

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 6.8 mg/l
 Exposure time: 72 h

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Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

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

Components:

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

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.

Components:

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

Triethylenetetramine:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 1.9 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

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

Components:

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Toxicity to microorganisms : EC50 (activated sludge): 384 mg/l
Exposure time: 3 h
Test Type: static test
Method: OECD Test Guideline 209

Polyoxypropylenediamine (MW=230):

Toxicity to microorganisms : EC50 (activated sludge): 750 mg/l
Exposure time: 3 h
Test Type: static test
Method: OECD Test Guideline 209

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Triethylenetetramine:

Toxicity to microorganisms : EC50 (activated sludge): 800 mg/l
Exposure time: 0.5 h
Test Type: static test
Test substance: Fresh water

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Toxicity to microorganisms : EC50: 97.3 mg/l
Exposure time: 2 h
Test Type: static test
Test substance: Fresh water

Components:**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**Components:****Polyoxypropylenediamine (MW=230):**

Acute aquatic toxicity : Harmful to aquatic life.

Diethylenetriamine:

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

Components:**Polyoxypropylenediamine (MW=230):**

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

4,4'-isopropylidenediphenol:

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

Persistence and degradability**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Not readily biodegradable.

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Biodegradation: 0 - 70 %
Exposure time: 74 d
Method: OECD Test Guideline 301B

Polyoxypropylenediamine (MW=230):

Biodegradability : Test Type: aerobic
Inoculum: Mixture
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Diethylenetriamine:

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

4,4'-isopropylidenediphenol:

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

Triethylenetetramine:

Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 162 d
Method: OECD Test Guideline 301D

Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 20 %
Exposure time: 84 d
Method: Inherent Biodegradability: Modified SCAS Test

Amines, polyethylenepoly-, tetraethylenepentamine fraction:

Biodegradability : Inoculum: activated sludge
Result: Not biodegradable
Biodegradation: 17 %
Exposure time: 84 d
Method: Inherent Biodegradability: Modified SCAS Test

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

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BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Components:

Polyoxypropylenediamine (MW=230):

Stability in water : Degradation half life(DT50): 12 Months (77 °F / 25 °C) pH: 6.5
Method: No information available.
Remarks: Fresh water**Components:**

Diethylenetriamine:

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

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Bioaccumulation : Bioconcentration factor (BCF): 77.4
Remarks: Does not bioaccumulate.

Diethylenetriamine:

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

Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine:

Partition coefficient: n-octanol/water : log Pow: 10.34
Method: OECD Test Guideline 117

Polyoxypropylenediamine (MW=230):

Partition coefficient: n-octanol/water : Pow: 22.09 (77 °F / 25 °C)
log Pow: 1.34 (77 °F / 25 °C)

Diethylenetriamine:

Partition coefficient: n-octanol/water : log Pow: -1.58 (68 °F / 20 °C)
pH: 7

Triethylenetetramine:

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Partition coefficient: n-octanol/water : log Pow: -2.65 (68 °F / 20 °C)
Method: OECD Test Guideline 117

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Partition coefficient: n-octanol/water : log Pow: -3.16

Mobility in soil

Mobility : No data available

Components:

Diethylenetriamine:
Distribution among environmental compartments : Koc: 19111
Triethylenetetramine:
Distribution among environmental compartments : Koc: 1584.9 - 5012
Method: OECD Test Guideline 106

Amines, polyethylenepoly-, tetraethylenepentamine fraction:
Distribution among environmental compartments : Koc: 3.2 - 3.7
Method: OECD Test Guideline 106

Stability in soil : No data available

Other adverse effects

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

Hazardous to the ozone layer

Ozone-Depletion Potential : 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

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SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of contents and container in accordance with all local, regional, national and international regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.

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

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

UN/ID No. : UN 3259
Proper shipping name : Amines, solid, corrosive, n.o.s.
(POLYOXYPROPYLENEDIAMINE, DIETHYLENETRIAMINE)
Class : 8
Packing group : III
Labels : Corrosive
Packing instruction (cargo aircraft) : 864
Packing instruction (passenger aircraft) : 860

IMDG-Code

UN number : UN 3259
Proper shipping name : AMINES, SOLID, CORROSIVE, N.O.S.
(POLYOXYPROPYLENEDIAMINE, DIETHYLENETRIAMINE)
Class : 8
Packing group : III
Labels : 8
EmS Code : F-A, S-B
Marine pollutant : yes(polyamide resin, 4,4'-Isopropylidenediphenol)

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

Not applicable for product as supplied.

National Regulations**49 CFR**

UN/ID/NA number : UN 3259
Proper shipping name : Amines, solid, corrosive, n.o.s.
(POLYOXYPROPYLENEDIAMINE, DIETHYLENETRIAMINE)
Class : 8
Packing group : III
Labels : CORROSIVE
ERG Code : 154
Marine pollutant : yes(polyamide resin, 4,4'-Isopropylidenediphenol)

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Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

CERCLA Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 311/312 Hazards

: Respiratory or skin sensitisation
Reproductive toxicity
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313

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

4,4'-isopropylidenediphenol	80-05-7	>= 1 - < 5 %
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This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

California Prop. 65

WARNING: This product can expose you to chemicals including ethylbenzene, which is/are known to the State of California to cause cancer, and 4,4'-isopropylidenediphenol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

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

AIIC : Not 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 : Not in compliance with the inventory

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

TCSI : Not in compliance with the inventory

TSCA : All substances listed as active on the TSCA inventory

SAFETY DATA SHEET

HUNTSMAN

Enriching lives through innovation

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Inventories

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

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

No substances are subject to a Significant New Use Rule.

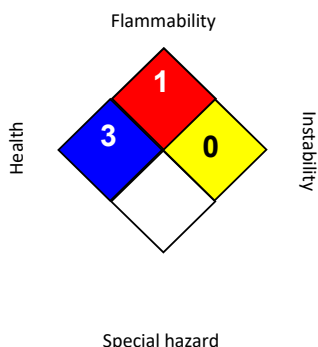
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	*	3
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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ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-3 / TWA : 8-hour time weighted average
US WEEL / TWA : 8-hr TWA

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

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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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