

SAFETY DATA SHEET

ARALDITE® 2040 B US

Section 1. Identification

GHS product identifier : ARALDITE® 2040 B US
Product code : 00070255
Other means of identification : Not available.
Product type : Liquid.
Material uses : Polyurethane Catalyst
Supplier's details : Huntsman Advanced Materials Americas LLC
P.O. Box 4980
The Woodlands, TX 77387

Non-Emergency phone: (800) 257-5547

e-mail address of person responsible for this SDS : MSDS@huntsman.com

Emergency telephone number (24h/7day) : Chemtrec: (800) 424-9300 or (703) 527-3887

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : Causes serious eye damage.
Causes skin irritation.
May cause an allergic skin reaction.
Harmful to aquatic life with long lasting effects.

Precautionary statements : Wear protective gloves: > 8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL). Wear eye or face protection. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a

Section 2. Hazards identification

POISON CENTER or physician. Dispose of contents and container in accordance with all local, regional, national and international regulations.

Other hazards which do not result in classification : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
1,1'-phenyliminodipropan-2-ol	7 - 13	3077-13-2
2-Ethyl-1,3-hexanediol	3 - 7	94-96-2
Tetrakis(2-hydroxypropyl)ethylenediamine (THPE)	1 - 3	102-60-3
1,2-diaminocyclohexane	1 - 3	694-83-7
Bis (1,2,2,6,6,-pentamethyl- 4-piperidiny) ester of decanedioic acid	0.1 - 1	41556-26-7
((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate	0.1 - 1	82919-37-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

- Flash point** : Closed cup: >200°C (>392°F)

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** :

Section 5. Fire-fighting measures

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

- Methods and materials for containment and cleaning up** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store between the following temperatures: 2 to 40°C (35.6 to 104°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eyeface protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Hand protection** : 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. > 8 hours (breakthrough time): butyl rubber, Ethyl Vinyl Alcohol Laminate (EVAL)
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Thermal hazards** : Not available.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid. [Paste.]
- Color** : Gray.
- Odor** : mild
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point/Freezing point** : Not available.
- Boiling/condensation point** : Not available.
- Flash point** : Closed cup: >200°C (>392°F)
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Relative density** : 1.23
- Solubility in water** : Slight
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not available.
- Dispersibility properties** : Dispersible in the following materials: cold water.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Endpoint	Species	Result
1,1'-phenyliminodipropyl-2-ol	-	LD50 Dermal	Rabbit	>2000 mg/kg
2-Ethyl-1,3-hexanediol	-	LD50 Oral	Rat	3800 mg/kg
	-	LC50 Inhalation Vapor	Rat	3.8 mg/l
	-	LD50 Dermal	Rabbit - Male, Female	8960 to 10521 mg/kg
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE) 1,2-diaminocyclohexane	-	LD50 Oral	Rat - Male, Female	4636 to 9281 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	2890 mg/kg
	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	4.9 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rat	1870 mg/kg
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	1170 mg/kg
	-	LD50 Dermal	Rabbit	>2000 mg/kg
	-	LD50 Oral	Rat	2369 to 3920 mg/kg

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
1,1'-phenyliminodipropyl-2-ol	-	Not known	Eyes - Severe irritant
	-	Not known	Skin - Mild irritant
2-Ethyl-1,3-hexanediol	-	Rabbit	Eyes - Severe irritant
	-	Rabbit	Skin - Irritant
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE) 1,2-diaminocyclohexane	-	Rabbit	Eyes - Irritant
	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Corrosive
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	Unknown guidelines	Rabbit	Eyes - Corrosive
	-	Rabbit	Skin - Severe irritant
	-	Rabbit	Eyes - Mild irritant

Conclusion/Summary

Skin	:	1,1'-phenyliminodipropyl-2-ol	Slightly irritating to the skin.
		2-Ethyl-1,3-hexanediol	Slightly irritating to the skin.
		Tetrakis(2-hydroxypropyl) ethylenediamine (THPE) 1,2-diaminocyclohexane	No additional information.
		Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	Severely corrosive to the skin.
		((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate	Severely irritating to the skin.
			No additional information.

Section 11. Toxicological information

Eyes

- : 1,1'-phenyliminodipropan-2-ol Severely irritating to eyes.
- 2-Ethyl-1,3-hexanediol Severely irritating to eyes.
- Tetrakis(2-hydroxypropyl) ethylenediamine (THPE) Irritating to eyes.
- 1,2-diaminocyclohexane Severely corrosive to the eyes.
- Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid Non-irritating to the eyes.
- ((1,2,2,6,6-pentamethyl), methyl-4-piperidinyl) sebacate No additional information.

Respiratory

- : 1,1'-phenyliminodipropan-2-ol No additional information.
- 2-Ethyl-1,3-hexanediol No additional information.
- Tetrakis(2-hydroxypropyl) ethylenediamine (THPE) No additional information.
- 1,2-diaminocyclohexane No additional information.
- Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid No additional information.
- ((1,2,2,6,6-pentamethyl), methyl-4-piperidinyl) sebacate No additional information.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result
1,2-diaminocyclohexane	-	skin	Guinea pig	Sensitizing
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	-	skin	Guinea pig	Not sensitizing
((1,2,2,6,6-pentamethyl), methyl-4-piperidinyl) sebacate	-	skin	Guinea pig	Sensitizing

Mutagenicity

Product/ingredient name	Test	Result
1,2-diaminocyclohexane	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Human Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative

Section 11. Toxicological information

Conclusion/Summary :

2-Ethyl-1,3-hexanediol	Not mutagenic in a standard battery of genetic toxicological tests.
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	Not mutagenic in a standard battery of genetic toxicological tests.
Titanium dioxide	Not mutagenic in a standard battery of genetic toxicological tests.
1,2-diaminocyclohexane	Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Not available.

Reproductive toxicity

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat - Male, Female	Negative	Negative	Negative
1,2-diaminocyclohexane	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	Negative	Negative

Conclusion/Summary :

Titanium dioxide	No known significant effects or critical hazards.
1,2-diaminocyclohexane	No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
2-Ethyl-1,3-hexanediol	-	Rat - Female	Positive - Dermal
	-	Rat - Female	Negative - Oral
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	-	Rat - Female	Negative - Oral
1,2-diaminocyclohexane	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Oral

Conclusion/Summary :

Titanium dioxide	No known significant effects or critical hazards.
1,2-diaminocyclohexane	No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
1,2-diaminocyclohexane	Category 3	Not applicable.	Respiratory tract irritation

Section 11. Toxicological information

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
 - pain
 - watering
 - redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
 - pain or irritation
 - redness
 - blistering may occur
- Ingestion** : Adverse symptoms may include the following:
 - stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Section 11. Toxicological information

Product/ingredient name	Test	Endpoint	Species	Result
2-Ethyl-1,3-hexanediol	-	Sub-acute LOAEL Oral	Rat - Male, Female	100 mg/kg
	-	Sub-chronic NOAEL Oral	Rat	480 mg/kg
	-	Sub-chronic NOAEL Dermal	Rat - Male, Female	3768 mg/kg
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-acute NOAEL Oral	Rat - Male, Female	1000 mg/kg/d
	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-acute NOAEL Oral	Rat - Male, Female	300 mg/kg/d
1,2-diaminocyclohexane	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-chronic NOAEL Oral	Rat - Male, Female	150 mg/kg/d
	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	16 mg/m ³

- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	22339 mg/kg
Dermal	141262.7 mg/kg
Inhalation (dusts and mists)	92.54 mg/l

Other information : Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	EU EC C.3 Algal Inhibition Test	Acute EC50	72 hours	Algae	150.67 mg/l
	EU EC C.2 Acute Toxicity for Daphnia	Acute IC0	48 hours Static	Daphnia	>100 mg/l
	DIN DIN 38412 Part 15	Acute LC50	48 hours Static	Fish	2700 mg/l
	DIN DIN 38412 Part 15	Acute LC50	96 hours Flow-through	Fish	4600 mg/l
1,2-diaminocyclohexane	-	Chronic NOEC	3 hours	Bacteria	700 mg/l
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	10 mg/l
	EU EC C.3 Algal Inhibition Test	Chronic NOECr	72 hours	Algae	4.25 mg/l
	-	Acute EC50	72 hours	Algae	29.6 mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	48 hours Static	Daphnia	19.8 mg/l
	DIN DIN 38412 Part 15	Acute LC50	48 hours	Fish	200 mg/l
	No official guidelines	Chronic EC10	20 hours Static	Bacteria	12500 mg/l
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC	21 days Semi-static	Daphnia	4.16 mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic NOECb	72 hours Static	Algae	3.2 mg/l
	Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute EC50	3 hours	Bacteria
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute EC50	24 hours	Daphnia	20 mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute LC50	96 hours	Fish	0.97 to 1 mg/l

Conclusion/Summary : 1,2-diaminocyclohexane Not toxic or harmful to aquatic organisms.

Persistence and degradability

Product/ingredient name	Test	Period	Result
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	OECD 302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	28 days	36 %
	EU	28 days	9 %
1,2-diaminocyclohexane	OECD 301D Ready Biodegradability - Closed Bottle Test	17 days	101 %
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	OECD 301E Ready Biodegradability - Modified OECD Screening Test	28 days	38 %

Conclusion/Summary :

Section 12. Ecological information

Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	Inherently biodegradable
Titanium dioxide	Not applicable, inorganic substance / preparation.
1,2-diaminocyclohexane	Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	Fresh water days	-	Not readily
1,2-diaminocyclohexane	Fresh water days	-	Readily
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	Fresh water >182 days	-	Not readily
((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate	Fresh water >182 days	-	-

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Tetrakis(2-hydroxypropyl) ethylenediamine (THPE)	-2.08	-	low
1,2-diaminocyclohexane	<-0.9	3.162	low
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	0.37	75.39	low
((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate	-	75.39	low

Mobility in soil

Not available.

Other adverse effects : No known significant effects or critical hazards.

Other ecological information

BOD5 : Not determined.

COD : Not determined.

TOC : Not determined.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Proper shipping name

DOT : Not regulated.
TDG : Not regulated.
IMDG : Not regulated.
IATA : Not regulated.

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-		-
TDG Classification	Not regulated.	-	-		-
IMDG Classification	Not regulated.	-	-		-
IATA Classification	Not regulated.	-	-		-

PG* : Packing group

Section 15. Regulatory information

Safety, health and environmental regulations specific for the product

United States Regulations

TSCA 8(b) inventory : All components are listed or exempted.
TSCA 5(a)2 final significant new use rule (SNUR) : No ingredients listed.
TSCA 5(e) substance consent order : No ingredients listed.
TSCA 12(b) export notification : No ingredients listed.
SARA 311/312 : Immediate (acute) health hazard
Clean Air Act - Ozone Depleting Substances (ODS) : This product does not contain nor is it manufactured with ozone depleting substances.
SARA 313 : No ingredients listed.
CERCLA Hazardous substances : No ingredients listed.

Section 15. Regulatory information

State regulations

PENNSYLVANIA - RTK : Limestone

California Prop 65 : **WARNING:** This product contains a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>
4-vinylcyclohexene	Yes.	Yes.

Canadian regulations

CEPA DSL : At least one component is not listed.

WHMIS Classes : Class D-2B: Material causing other toxic effects (Toxic).
 Class E: Corrosive material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Brazil Regulations

Classification system used : Norma ABNT-NBR 14725-2:2012

International lists

Australia inventory (AICS): At least one component is not listed.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: At least one component is not listed.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): At least one component is not listed.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.) :

Health	3
Flammability	1
Physical hazards	0
Personal protection	

The customer is responsible for determining the PPE code for this material.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

National Fire Protection Association (U.S.A.) :

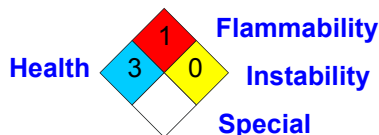


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Section 16. Other information



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

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

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