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SAFETY DATA SHEET

1. Identification

Product identifier

Product No.:	Product name:	Common name(s), synonym(s)
371073	BD E-Z Scrub™ surgical scrub brush impregnated with 4% CHG.Color code red.	No data available

Other means of identification

SDS number: 088100001710

Recommended use and restriction on use

Recommended use: Skin Antiseptic
Restrictions on use: None known.

Manufacturer/Importer/Supplier/Distributor Information

Manufacturer

Company Name: Becton Dickinson
Address: 9450 South State Street
Sandy, UT 84070 USA
Telephone: 1-801-565-2300 (US 24 hour)
Fax:
Contact Person: Regulatory Affairs

Emergency telephone number: CHEMTREC 1 800 424 9300

CHEMTREC +001-703-527-3887 (International)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Serious Eye Damage/Eye Irritation	Category 1
Carcinogenicity	Category 2
Specific Target Organ Toxicity - Repeated Exposure	Category 2

Environmental Hazards

Acute hazards to the aquatic environment	Category 1
Chronic hazards to the aquatic environment	Category 2

Label Elements

Hazard Symbol:

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Signal Word: Danger

Hazard Statement:
H318: Causes serious eye damage.
H351: Suspected of causing cancer.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention:
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.
P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P273: Avoid release to the environment.

Response:
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER/doctor.
P391: Collect spillage.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification:
-: EARS: CHG may cause permanent damage / deafness when instilled in the middle ear
-: May cause permanent damage if permitted to enter and remain in the ears or eyes for a long period of time

3. Composition/information on ingredients

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Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)		18472-51-0	4.34%
Diethanolamine		111-42-2	3.28%
N,N-BIS(2-HYDROXYETHYL)DODECANAMIDE		120-40-1	3.22%
Octadecanoic acid		57-11-4	0.165%
Sodium hydroxide (Na(OH))		1310-73-2	0.01%
Hydrochloric acid		7647-01-0	0.01%
1,4-Dioxane		123-91-1	0.01%
Oxirane		75-21-8	0.0001%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Ingestion: If swallowed, do NOT induce vomiting. Give a glass of water. Wash out mouth with water, treat with gastric lavage, using milk, egg white or mild soap.

Inhalation: Get medical attention if symptoms occur. Over exposure may cause headache, fatigue, dizziness, loss of coordination and unconsciousness. Vapor has anesthetic properties.

Skin Contact: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Eye contact: If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

Most important symptoms/effects, acute and delayed

Symptoms: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: Not relevant.

5. Fire-fighting measures

General Fire Hazards: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

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Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, dry powder or carbon dioxide.

Unsuitable extinguishing media: No data available.

Specific hazards arising from the chemical: Fire causes formation of toxic gases.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

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

Methods and material for containment and cleaning up: Absorb spillage with suitable absorbent material. Transfer to a container for disposal. Clean surface thoroughly to remove residual contamination.

Environmental Precautions: Do not release into the environment.

7. Handling and storage

Precautions for safe handling: No specific precautions.

Conditions for safe storage, including any incompatibilities: Store at room temperature (20-25°C). Avoid excessive heat (40°C). Store isolated from oxidizers, ignition sources, and explosives. Consult local fire codes for additional storage information.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values		Source
Diethanolamine	TWA	3 ppm	15 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)

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	TWA	3 ppm	15 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A, as amended (06 2008)
	ST ESL		2 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		0.2 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	ST ESL		10 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		1 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	TWA PEL	0.46 ppm	2 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
Diethanolamine - Inhalable fraction and vapor.	TWA		1 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Diethanolamine	REL	3 ppm	15 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Octadecanoic acid - Particulate.	AN ESL		5 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
Octadecanoic acid - Vapor.	ST ESL		1,000 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
Octadecanoic acid - Particulate.	ST ESL		50 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
Octadecanoic acid - Vapor.	AN ESL		100 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
Octadecanoic acid	TWA		10 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Sodium hydroxide (Na(OH))	Ceiling		2 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)
	Ceiling		2 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A, as amended (06 2008)
Sodium hydroxide (Na(OH)) - Particulate.	AN ESL		2 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (07 2011)
	ST ESL		20 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (07 2011)
Sodium hydroxide (Na(OH))	Ceiling		2 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	Ceiling		2 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	Ceil_Time		2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	PEL		2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (02 2006)
	IDLH		10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended (10 2017)
Hydrochloric acid	Ceiling	5 ppm	7 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)
	Ceiling	5 ppm	7 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A, as amended (06 2008)
	ST ESL		130 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)

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	AN ESL		5.7 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		8.4 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	ST ESL		190 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	Ceiling	5 ppm	7 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	Ceiling	2 ppm		US. ACGIH Threshold Limit Values, as amended (12 2010)
	Ceil_Time	5 ppm	7 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceiling	5 ppm	7 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (02 2006)
	IDLH	50 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended (10 2017)
1,4-Dioxane	TWA	25 ppm	90 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)
	TWA	25 ppm	90 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A, as amended (06 2008)
	ST ESL		250 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		25 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		90 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	ST ESL		900 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	TWA PEL	0.28 ppm	1.0 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended (12 2010)
	Ceil_Time	1 ppm	3.6 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	PEL	100 ppm	360 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended (02 2006)
	IDLH	500 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended (10 2017)
Oxirane	TWA	1 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)
	STEL	5 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended (1989)
	AN ESL		1 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	ST ESL		10 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	AN ESL		2 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as amended (12 2010)
	ST ESL		20 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality), as

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			amended (12 2010)
	TWA PEL	1 ppm 2 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	STEL	5 ppm	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	TWA A LV	0.5 ppm	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants, as amended (08 2010)
	TWA	1 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	Ceil_Time	5 ppm 9 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	0.1 ppm 0.18 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	800 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended (10 2017)
	STEL	5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended (02 2006)
	TWA	1 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended (02 2006)
	OSHA_ACT	0.5 ppm	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended (02 2006)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Oxirane (S-(2-hydroxyethyl) mercapturic acid (HEMA): Sampling time: End of shift.)	5 µg/g (Creatinine in urine)	ACGIH BEI (03 2018)
Oxirane (N-(2-hydroxyethyl)-valine (HEV) hemoglobin adducts: Sampling time: Not critical.)	5000 pmol/g (Hemoglobin adducts)	ACGIH BEI (03 2018)

Appropriate Engineering Controls No data available.

Individual protection measures, such as personal protective equipment

General information: Do not eat, drink or smoke when using the product.

Eye/face protection: Wear goggles/face shield.

Skin Protection

Hand Protection: Hand protection not required.

Other: No data available.

Respiratory Protection: None should be needed.

Hygiene measures: No data available.

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9. Physical and chemical properties

Appearance	
Physical state:	liquid
Form:	liquid
Color:	Clear, Pink, Red
Odor:	Mild
Odor threshold:	No data available.
pH:	6 - 7.5
Melting point/freezing point:	Similar to water
Initial boiling point and boiling range:	>= 100 °C Similar to water
Flash Point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Relative density:	0.99 - 1.10
Solubility(ies)	
Solubility in water:	Completely soluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Not applicable
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	1,000 mm2/s (25 °C)

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Not known.
Conditions to avoid:	No data available.
Incompatible Materials:	Avoid contact with oxidizers or reducing agents.

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Hazardous Decomposition Products: Carbon Dioxide. Carbon Monoxide. Hydrogen chloride gas. Nitrogen oxides. Ammonia.

11. Toxicological information

General information: EARS: CHG may cause permanent damage / deafness when instilled in the middle ear May cause permanent damage if permitted to enter and remain in the ears or eyes for a long period of time

Information on likely routes of exposure

Ingestion: No data available.

Inhalation: No data available.

Skin Contact: No data available.

Eye contact: Severely irritating, and may seriously damage eye tissue.

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion: No data available.

Inhalation: No data available.

Skin Contact: No data available.

Eye contact: No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: ATEmix: 10,998.44 mg/kg

Dermal
Product: No data available.

Inhalation
Product: ATEmix: 66.83 mg/l

Repeated dose toxicity
Product: No data available.

Specified substance(s):
Diethanolamine — LOAEL (Mouse(Female), Oral, 13 Weeks): 142 mg/kg Oral Experimental result, Key study
NOAEL (Rat(Female, Male), Inhalation): 15 mg/m3 Inhalation Experimental result, Key study
LOAEL (Rat(Male), Oral, 13 Weeks): 25 mg/kg Oral Experimental result,

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	Key study LOAEL (Rat(Female), Oral, 13 Weeks): 160 ppm(m) Oral Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation): 3 mg/m3 Inhalation Experimental result, Key study
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	NOAEL (Rat(Female, Male), Oral, 28 d): > 750 mg/kg Oral Read-across from supporting substance (structural analogue or surrogate), Key study NOAEL (Rat(Female, Male), Oral, 90 d): 50 mg/kg Oral Experimental result, Key study LOAEL (Rat(Female, Male), Dermal, 104 - 105 Weeks): 50 mg/kg Dermal Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 104 - 105 Weeks): 100 mg/kg Dermal Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 14 Weeks): 100 mg/kg Dermal Experimental result, Key study
Octadecanoic acid	NOAEL (Rat(Female, Male), Oral, 42 d): 1,000 mg/kg Oral Read-across based on grouping of substances (category approach), Key study NOAEL (Rat(Male), Oral, 18 Weeks): 10 %(m) Oral Read-across based on grouping of substances (category approach), Supporting study NOAEL (Rat(Male), Oral, 18 Weeks): 10,000 mg/kg Oral Read-across based on grouping of substances (category approach), Supporting study
Hydrochloric acid	NOAEL (Mouse(Female, Male), Inhalation, 4 - 91 d): 20 ppm(m) Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation, 4 - 91 d): 20 ppm(m) Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation, 4 - 91 d): 10 ppm(m) Inhalation Experimental result, Key study LOAEL (Mouse(Female, Male), Inhalation, 4 - 91 d): 50 ppm(m) Inhalation Experimental result, Key study LOAEL (Rat(Female, Male), Inhalation, 4 - 91 d): 50 ppm(m) Inhalation Experimental result, Key study
1,4-Dioxane	LOAEL (Rat(Female, Male), Inhalation, 13 Weeks): 100 ppm(m) Inhalation Experimental result, Not specified NOAEL (Rat(Female), Oral, 716 d): 19 mg/kg Oral Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation): > 400 mg/m3 Inhalation Experimental result, Key study NOAEL (Mouse(Female), Oral, 13 Weeks): <= 640 ppm(m) Oral Experimental result, Supporting study LOAEL (Rat(Female, Male), Inhalation): 360 mg/m3 Inhalation Experimental result, Not specified
Oxirane	NOAEL (Rat(Female, Male), Inhalation, 2 yr): 10 ppm(m) Inhalation Experimental result, Weight of Evidence study NOAEL (Mouse(Female, Male), Inhalation, 10 - 11 Weeks): 10 ppm(m) Inhalation Experimental result, Weight of Evidence study

Skin Corrosion/Irritation

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Product: May cause skin irritation in susceptible persons.

Serious Eye Damage/Eye Irritation
Product: No data available.

Respiratory or Skin Sensitization
Product: No data available.

Specified substance(s):

Diethanolamine	Skin sensitization:, in vivo (Guinea pig): Non sensitising
Octadecanoic acid	Skin sensitization:, in vivo (Guinea pig): Non sensitising
1,4-Dioxane	Skin sensitization:, in vivo (Guinea pig): Non sensitising

Carcinogenicity
Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Diethanolamine	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:
No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No data available.

In vivo
Product: No data available.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

Aspiration Hazard
Product: No data available.

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Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: Low toxicity to sewage microorganisms

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	EC 100 (Daphnia magna, 48 h): 0.12 mg/l Experimental result, Key study EC 50 (Daphnia magna, 48 h): 0.087 mg/l Experimental result, Key study ED 0 (Daphnia magna, 48 h): 0.04 mg/l Experimental result, Key study EC 50 (Daphnia magna, 48 h): 0.05 - 0.1 mg/l Experimental result, Not specified
Diethanolamine	NOAEL (Daphnia magna, 48 h): < 24 mg/l Experimental result, Supporting study EC 50 (Ceriodaphnia dubia, 48 h): 89.9 mg/l Experimental result, Key study EC 50 (Daphnia magna, 48 h): 171 mg/l Experimental result, Supporting study EC 50 (Daphnia magna, 48 h): 55 mg/l Experimental result, Supporting study EC 50 (Ceriodaphnia dubia, 48 h): 30.1 mg/l Experimental result, Key study
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	EC 100 (Daphnia magna, 24 h): 5.6 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study NOAEL (Daphnia magna, 48 h): +/- +/- 1 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study LOAEL (Daphnia magna, 48 h): +/- +/- 2 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study EC 50 (Daphnia magna, 24 h): 3.3 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study ED 0 (Daphnia magna, 24 h): 2 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study
Octadecanoic acid	EC 50 (Daphnia magna, 47 h): > 32 mg/l Experimental result, Weight of Evidence study NOAEL (Daphnia magna, 48 h): > 4.8 mg/l Read-across based on grouping of substances (category approach), Weight of Evidence study EC 50 (Daphnia magna, 48 h): > 4.8 mg/l Read-across based on grouping of substances (category approach), Weight of Evidence study LC 50 (Artemia salina, 48 h): > 20 mg/l Experimental result, Weight of

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	Evidence study
Sodium hydroxide (Na(OH))	LOAEL (Daphnia magna): 40 - 240 mg/l Experimental result, Supporting study LC 50 (Ophryotrocha diadema, 48 h): 33 - 100 mg/l Experimental result, Supporting study LC 50 (Saltwater Shrimp, 48 h): 30 - 100 mg/l Experimental result, Supporting study LC (Bulinus truncatus, 96 h): 150 mg/l Experimental result, Supporting study LD (Freshwater insect larvae): 125 - 1,000 mg/l Not specified, Supporting study
Hydrochloric acid	LC 50 (Green or European shore crab (Carcinus maenas), 48 h): 240 mg/l Mortality LC 50 (Common shrimp, sand shrimp (Crangon crangon), 48 h): 260 mg/l Mortality
1,4-Dioxane	EC 50 (Daphnia magna, 24 h): 4,700 mg/l Experimental result, Supporting study EC 100 (Daphnia magna, 24 h): 10,000 mg/l Experimental result, Supporting study EC 50 (Daphnia magna, 48 h): > 1,000 mg/l Experimental result, Key study ED 0 (Daphnia magna, 24 h): 2,070 mg/l Experimental result, Supporting study LC 50 (Scud (Gammarus pseudolimnaeus), 96 h): 1,800 - 2,872 mg/l Mortality
Oxirane	LC 50 (Water flea (Daphnia magna), 24 h): 260 mg/l Mortality LC 50 (Water flea (Daphnia magna), 48 h): 300 mg/l Mortality LC 50 (Brine shrimp (Artemia sp.), 24 h): 570 mg/l Mortality LC 50 (Water flea (Daphnia magna), 24 h): > 300 mg/l Mortality LC 50 (Brine shrimp (Artemia sp.), 24 h): > 500 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product:	No data available.
Specified substance(s):	
Diethanolamine	NOAEL (Various): > 1 mg/l Estimated by calculation, Supporting study
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	LC 100 (Oncorhynchus mykiss, 24 h): 3.2 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study LOAEL (Oncorhynchus mykiss, 28 d): 1 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study NOAEL (Oncorhynchus mykiss, 28 d): 0.32 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study
1,4-Dioxane	NOAEL (Pimephales promelas, 32 d): > 103 mg/l Experimental result, Key study

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Aquatic Invertebrates

Product: No data available.

Specified substance(s):

D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	NOAEL (Daphnia magna, 21 d): 20.6 µg/l Experimental result, Key study EC 50 (Daphnia magna, 21 d): 35.8 µg/l Experimental result, Key study LOAEL (Daphnia magna, 21 d): 61.8 µg/l Experimental result, Key study EC 100 (Daphnia magna, 21 d): 61.8 µg/l Experimental result, Key study
Diethanolamine	LOAEL (Daphnia magna, 21 d): 1.56 mg/l Experimental result, Key study NOAEL (Daphnia magna, 21 d): 0.78 mg/l Experimental result, Key study LC 0 (Daphnia magna, 21 d): 3.13 mg/l Experimental result, Key study
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	NOAEL (Daphnia magna, 21 d): 0.07 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study LOAEL (Daphnia magna, 21 d): 0.24 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study
Octadecanoic acid	NOAEL (Daphnia magna, 21 d): > 0.22 mg/l Read-across based on grouping of substances (category approach), Key study EC 50 (Daphnia magna, 21 d): > 0.22 mg/l Read-across based on grouping of substances (category approach), Key study LOAEL (Daphnia magna, 21 d): > 0.22 mg/l Read-across based on grouping of substances (category approach), Key study
1,4-Dioxane	NOAEL (Daphnia magna, 21 d): 1,000 mg/l Experimental result, Key study

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: No data available.

Specified substance(s):

D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	52 % Detected in water. Experimental result, Key study 100 % Detected in water. Experimental result, Not specified 79 % Detected in water. Experimental result, Key study 71 % Detected in water. Experimental result, Key study 90 % (28 d) Detected in water. Experimental result, Not specified

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Diethanolamine	96 % (10 d) Detected in water. Experimental result, Supporting study 93 % (28 d) Detected in water. Experimental result, Key study 96 % (10 d) Detected in water. Experimental result, Supporting study 93 % (28 d) Detected in water. Experimental result, Supporting study 97 % (28 d) Detected in water. Experimental result, Supporting study
Oxirane	69 % (20 d) Detected in water. Experimental result, Supporting study > 50 % (20 d) Detected in water. Not specified, Supporting study 96 % Detected in water. Experimental result, Key study 93 - 98 % (28 d) Detected in water. Experimental result, Supporting study 100 % Detected in water. Experimental result, Key study

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available.

Specified substance(s):

D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	Leuciscus idus, Bioconcentration Factor (BCF): 42 Aquatic sediment Experimental result, Key study Leuciscus idus, Bioconcentration Factor (BCF): 40 Aquatic sediment Experimental result, Key study Green algae (Chlorella fusca vacuolata), Bioconcentration Factor (BCF): 2,560 (Static) Carp (Leuciscus idus melanotus), Bioconcentration Factor (BCF): 42 (Renewal)
Diethanolamine	Bioconcentration Factor (BCF): 0.89 Aquatic sediment Estimated by calculation, Weight of Evidence study Various, Bioconcentration Factor (BCF): 1.43 Aquatic sediment QSAR, Weight of Evidence study Various, Bioconcentration Factor (BCF): 1.34 Aquatic sediment QSAR, Weight of Evidence study Various, Bioconcentration Factor (BCF): 0.15 Aquatic sediment QSAR, Weight of Evidence study Various, Bioconcentration Factor (BCF): 1.65 Aquatic sediment QSAR, Weight of Evidence study
Octadecanoic acid	Danio rerio, Bioconcentration Factor (BCF): 236 - 282 Aquatic sediment Read-across from supporting substance (structural analogue or surrogate), Key study Danio rerio, Bioconcentration Factor (BCF): 234 - 249 Aquatic sediment Read-across from supporting substance (structural analogue or surrogate), Key study Danio rerio, Bioconcentration Factor (BCF): 238 - 288 Aquatic sediment Read-across from supporting substance (structural analogue or surrogate), Key study

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1,4-Dioxane	Cyprinus carpio, Bioconcentration Factor (BCF): 0.3 - 0.7 Aquatic sediment Experimental result, Key study Cyprinus carpio, Bioconcentration Factor (BCF): 0.2 - 0.6 Aquatic sediment Experimental result, Key study

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: Not applicable

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	No data available.
Diethanolamine	No data available.
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	No data available.
Octadecanoic acid	No data available.
Sodium hydroxide (Na(OH))	No data available.
Hydrochloric acid	No data available.
1,4-Dioxane	No data available.
Oxirane	No data available.

Other adverse effects: No data available.

13. Disposal considerations

Disposal instructions: Dispose of waste and residues in accordance with local authority requirements.

Contaminated Packaging: Water, if necessary with cleansing agents.

14. Transport information

DOTUN Number:	Not regulated.
UN Proper Shipping Name:	Not regulated.
Transport Hazard Class(es)	
Class:	Not regulated.
Label(s):	Not regulated.
Packing Group:	Not regulated.
Marine Pollutant:	Not regulated.
Limited quantity	Not regulated.
Excepted quantity	Not regulated.

Special precautions for user: Not regulated.

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IMDG

UN Number:	Not regulated.
UN Proper Shipping Name:	Not regulated.
Transport Hazard Class(es)	
Class:	Not regulated.
Subsidiary risk:	Not regulated.
EmS No.:	Not regulated.
Packing Group:	Not regulated.
Environmental Hazards	
Marine Pollutant:	Not regulated.
Special precautions for user:	Not regulated.

IATA

UN Number:	Not regulated.
Proper Shipping Name:	Not regulated.
Transport Hazard Class(es):	
Class:	Not regulated.
Subsidiary risk:	Not regulated.
Packing Group:	Not regulated.
Environmental Hazards	
Marine pollutant:	Not regulated.
Special precautions for user:	Not regulated.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

Chemical Identity	OSHA hazard(s)
Oxirane	Mutagenicity
	Cancer
	Skin irritation
	Reproductive toxicity
	Flammability
	respiratory tract irritation
	Central nervous system
	Acute toxicity
	Skin sensitization
	Eye irritation

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CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Diethanolamine	100 lbs.
Sodium hydroxide (Na(OH))	1000 lbs.
Hydrochloric acid	5000 lbs.
1,4-Dioxane	100 lbs.
Oxirane	10 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate (Acute) Health Hazards
Delayed (Chronic) Health Hazard
Serious eye damage or eye irritation
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 Extremely Hazardous Substance

Chemical Identity	Reportable quantity	Threshold Planning Quantity
Hydrochloric acid	5000 lbs.	500 lbs.
Oxirane	10 lbs.	1000 lbs.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
Diethanolamine	100 lbs.
Sodium hydroxide (Na(OH))	1000 lbs.
Hydrochloric acid	5000 lbs.
1,4-Dioxane	100 lbs.
Oxirane	10 lbs.

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SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Hydrochloric acid	500lbs
Oxirane	500lbs
D-Gluconic acid, compd. with N1,N14-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetraazatetradecanediimidamide (2:1)	10000 lbs
Diethanolamine	10000 lbs
N,N-BIS(2-HYDROXYETHYL)DODECAN AMIDE	10000 lbs
Octadecanoic acid	10000 lbs
Sodium hydroxide (Na(OH))	10000 lbs
1,4-Dioxane	10000 lbs

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Diethanolamine	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Chemical Identity	Reportable quantity
Sodium hydroxide (Na(OH))	Reportable quantity: 1000 lbs.
Hydrochloric acid	Reportable quantity: 5000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

none

Chemical Identity	Reportable quantity
Hydrochloric acid	15000 lbs
Hydrochloric acid	5000 lbs
Oxirane	10000 lbs

US State Regulations

US. California Proposition 65

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

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity
Diethanolamine

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US. Massachusetts RTK - Substance List

Chemical Identity
Diethanolamine
Hydrochloric acid
1,4-Dioxane
Oxirane

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
Diethanolamine

US. Rhode Island RTK

Chemical Identity
Diethanolamine

16.Other information, including date of preparation or last revision

Issue Date:	04/14/2020
Version #:	5.2
Revision Information:	
Further Information:	No data available.
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