Section 1. Identification

GHS product identifier : **Pavegrip 519 asphalt additive**

Product type : Liquid.

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

Product use : Asphalt antistripping additive.

Supplier's details : Pre Tech Industries, Inc.
15 Heather Drive
Rye, NH 03870

Phone: (603) 475-2805

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 : ACUTE TOXICITY: ORAL - Category 4
ACUTE TOXICITY: SKIN - Category 3
ACUTE TOXICITY: INHALATION - Category 3
SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [central nervous system (CNS) and kidneys] - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [central nervous system (CNS), kidneys and liver] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :

Section 2. Hazards identification

Toxic in contact with skin or if inhaled.
Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause damage to organs. (central nervous system (CNS), kidneys)
May cause damage to organs through prolonged or repeated exposure. (central nervous system (CNS), kidneys, liver)
Harmful to aquatic life with long lasting effects.

Precautionary statements : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Get medical attention if you feel unwell. IF exposed or if you feel unwell: Call a POISON CENTER or physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. Store locked up. 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
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	30 - 60	83016-70-0
Methyldiethanolamine	30 - 60	105-59-9
Bis(Dimethylaminoethyl)Ether	13 - 30	3033-62-3
2-Dimethylaminoethanol	13 - 30	108-01-0
Dimethylaminoethoxyethanol	13 - 30	1704-62-7
N-Butyl morpholine	7 - 13	1005-67-0
Ethylene glycol	3 - 7	107-21-1

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.

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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. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. 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 severe burns. Toxic in contact with skin.

Ingestion : Harmful if swallowed. 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

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

Notes to physician : Treatment with ethyl alcohol is indicated if toxic ingestion is suspected or if there is metabolic acidosis following ingestion of this product. Administer ethyl alcohol sufficient to maintain blood ethyl alcohol levels of above 100 mg/dL.

4-Methylpyrazole (Fomepizole, Antizole) is also a recognized antidote for this product. 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: 103°C (217.4°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 : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen 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). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

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 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

Occupational exposure limits

Ingredient name	Exposure limits

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Bis(Dimethylaminoethyl)Ether	**ACGIH TLV (United States, 3/2012).** **Absorbed through skin.** STEL: 0.15 ppm 15 minutes. TWA: 0.05 ppm 8 hours.
Ethylene glycol	**ACGIH TLV (United States, 3/2012).** C: 100 mg/m³ 0 hours. Form: Aerosol

Appropriate engineering controls : Use only with adequate ventilation. 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.

Section 8. Exposure controls/personal protection

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. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face 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.

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.

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.

Color : Black.

Odor : Amine-like.

Odor threshold : Not available.

pH : 10.25

Melting point/Freezing point : Not available.

Boiling/condensation point : Not available.

Flash point : Closed cup: 103°C (217.4°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

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Lower and upper explosive (flammable) limits	:	Not available.
Vapor pressure	:	Not available.
Vapor density	:	Not available.
	:	1.0115

Section 9. Physical and chemical properties

Relative density

Solubility in water : Easily soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (room temperature): 0.28 cm^2/s (28 cSt)

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

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2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	5700 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	1364 mg/kg
Methyldiethanolamine	-	LC50 Inhalation Dusts and mists	Rat - Male, Female	>6.5 mg/m³
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male	10244 mg/kg
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Female	11336 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	4680 mg/kg
Bis(Dimethylaminoethyl) Ether	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat - Male, Female	4 mg/l
	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat - Male, Female	>2.204 mg/l
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Female	314 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	609 mg/kg
	OECD 401 Acute	LD50 Oral	Rat - Male,	677 mg/kg

Section 11. Toxicological information

2-Dimethylaminoethanol	Oral Toxicity OECD 403 Acute Inhalation Toxicity EPA OPPTS OPPTS 870.1100 Acute Oral Toxicity	LC50 Inhalation Vapor	Female Rat - Male, Female	1641 ppm
		LD0 Dermal	Rabbit - Male, Female	>3000 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	1182.7 mg/kg
Dimethylaminoethoxyethanol	OECD 403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat - Male, Female	>392.2 mg/m³
	OECD 402 Acute Dermal Toxicity	LD50 Dermal	Rabbit - Male, Female	1663 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	2150 mg/kg
	OECD 401 Acute Oral Toxicity	LD50 Oral	Rat - Male, Female	2558 to 5660 mg/kg
N-Butyl morpholine	-	LC50 Inhalation Vapor	Rat	2.1 mg/l
	-	LD50 Dermal	Rabbit - Male, Female	1.82 g/kg
	-	LD50 Oral	Rat - Male, Female	0.33 g/kg
Ethylene glycol	No official guidelines	LD50 Dermal	Mouse - Male, Female	>3500 mg/kg
	No official guidelines	LD50 Oral	Rat - Male, Female	7712 mg/kg

Irritation/Corrosion

Product/ingredient name	Test	Species	Result
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Corrosive
	Unknown guidelines	Rabbit	Skin - Non-corrosive
Methyldiethanolamine	-	Rabbit	Eyes - Severe irritant
	-	Rabbit	Skin - Moderate irritant
Bis(Dimethylaminoethyl)Ether	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Severe irritant
	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Corrosive
Dimethylaminoethoxyethanol	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Corrosive
	OECD 405 Acute Eye Irritation/ Corrosion	Rabbit	Eyes - Corrosive
N-Butyl morpholine	-	Rabbit	Skin - Mild irritant
Ethylene glycol	No official guidelines	Rabbit	Skin - Non-irritant.
	No official guidelines	Rabbit	Eyes - Non-irritant.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result

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2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
Methyldiethanolamine	-	skin	Guinea pig	Not sensitizing
Bis(Dimethylaminoethyl) Ether	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing
2-Dimethylaminoethanol	EPA OPPTS	skin	Guinea pig	Not sensitizing
Dimethylaminoethoxyethanol	OECD 406 Skin Sensitization	skin	Guinea pig	Not sensitizing

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Section 11. Toxicological information

Ethylene glycol	No official guidelines	skin	Guinea pig	Not sensitizing

Mutagenicity

Product/ingredient name	Test	Result

2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Equivocal
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +	Negative
Methyldiethanolamine	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
Bis(Dimethylaminoethyl)Ether	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Equivocal
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
2-Dimethylaminoethanol	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative

Section 11. Toxicological information

Dimethylaminoethoxyethanol	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
N-Butyl morpholine	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	Experiment: In vitro Subject: bacteria/yeast Metabolic activation: +/-	Negative
Ethylene glycol	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal Cell: Germ	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative

Conclusion/Summary :

Dimethylaminoethoxyethanol Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Product/ingredient name	Test	Species	Dose	Exposure	Result/Result type
Ethylene glycol	No official guidelines	Mouse - Male, Female	1500 mg/kg	103 weeks	Negative - Oral - NOAEL
	No official guidelines	Rat - Male, Female	1000 mg/kg	24 months; 7 days per week	Negative - Oral - NOAEL

Reproductive toxicity

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Section 11. Toxicological information

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 415 One-Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	-	-
Dimethylaminoethoxyethanol	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat - Male, Female	Negative	-	-

Conclusion/Summary :

2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	No known significant effects or critical hazards.
Dimethylaminoethoxyethanol	No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
Methyldiethanolamine	-	Rat - Male, Female	Negative - Dermal
Bis(Dimethylaminoethyl)Ether	OECD 414 Prenatal Developmental Toxicity Study	Rabbit	Positive - Dermal
2-Dimethylaminoethanol	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Inhalation
Dimethylaminoethoxyethanol	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat	Negative - Inhalation
Ethylene glycol	No official guidelines	Mouse - Male, Female	Positive - Oral
	No official guidelines	Rat - Male, Female	Positive - Oral
	-	Mouse - Male, Female	Negative - Dermal
	No official guidelines	Rabbit - Male, Female	Negative - Oral

Conclusion/Summary :

2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	In accordance with section 1 of Regulation (EC) No 1907/2006, Annex XI, this test does not appear scientifically necessary.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
2-Dimethylaminoethanol	Category 3	Not applicable.	Respiratory tract irritation
Ethylene glycol	Category 2	Not determined	central nervous system (CNS) and kidneys

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	central nervous system (CNS), kidneys and liver

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. 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 severe burns. Toxic in contact with skin.

Ingestion : Harmful if swallowed. 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

Potential delayed effects

Potential immediate effects

Potential delayed effects

Long term exposure

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: Not available.

: Not available.

: Not available.

: Not available.

Section 11. Toxicological information

Potential chronic health effects

Product/ingredient name	Test	Endpoint	Species	Result
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOAEL Oral	Rat - Male, Female	>100 mg/kg
Methyldiethanolamine	EPA CFR	Sub-chronic NOAEL Dermal	Rat - Male, Female	750 mg/kg
Bis(Dimethylaminoethyl) Ether	OECD 411 Subchronic Dermal Toxicity: 90-day Study	Sub-chronic NOAEL Dermal	Rabbit - Male, Female	>8 mg/kg
	-	Sub-chronic NOEC Inhalation Vapor	Rat - Male, Female	8.2 mg/m³
2-Dimethylaminoethanol	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	Sub-chronic NOEC Inhalation Vapor	Rat - Male, Female	87.5 mg/m³
Dimethylaminoethoxyethanol	OECD 411 Subchronic Dermal Toxicity: 90-day Study	Sub-chronic NOAEL Dermal	Rat - Male, Female	>222.25 mg/kg
	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-acute NOEC Inhalation Dusts and mists	Rat - Male, Female	50.8 mg/m³
Ethylene glycol	OECD 408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Sub-chronic NOAEL Oral	Rat - Male, Female	150 mg/kg/d
	-	Chronic NOAEL Oral	Rat - Male, Female	200 mg/kg/d
	-	Chronic NOAEL Oral	Mouse - Male, Female	1500 mg/kg/d
	OECD 407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Sub-acute NOAEL Oral	Rat - Male, Female	200 mg/kg/d
	OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study	Sub-acute NOEL Dermal	Dog - Male	>4000 mg/kg
	OECD 410 Repeated Dose Dermal Toxicity: 21/28-day Study	Sub-acute NOAEL Dermal	Dog - Male	>2000 mg/kg

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

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Section 11. Toxicological information

Route	ATE value
Oral Dermal Inhalation (vapors)	1018 mg/kg 812.8 mg/kg 8.017 mg/l

Other information : Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result

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2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Semi-static	Daphnia	72	mg/l
	EU EC C.3 Algal Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	>110	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	IC50	3 hours	Bacteria	>100	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Semi-static	Fish	>320	mg/l
	OECD 211 *Daphnia Magna* Reproduction Test	Chronic	NOEC	28 days Semi-static	Daphnia	1.9	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECr	72 hours Static	Algae	29.3	mg/l
Methyldiethanolamine	DIN DIN 38412 Part 8	Acute	EC50	17 hours	Bacteria	413.8	mg/l
	EU	Acute	EC50	48 hours Static	Daphnia	233	mg/l
	DIN DIN 38412 part 9	Acute	ErC50 (growth rate)	72 hours	Algae	176	mg/l
	DIN DIN 38412 Part 15	Acute	LC50	96 hours Static	Fish	1000 to 2200	mg/l
Bis(Dimethylaminoethyl) Ether	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	102	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	24	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours Semi-static	Fish	131.2	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Chronic	EC20	30 minutes Static	Bacteria	>720	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECb	72 hours Static	Algae	1.83	mg/l
2-Dimethylaminoethanol	No official guidelines	Acute	EC50	72 hours Static	Algae	66.08	mg/l

Section 12. Ecological information

	EU	Acute	EC50	48 hours Static	Daphnia	98.37	mg/l
	DIN	Acute	LC50	96 hours Static	Fish	146.63	mg/l
Dimethylaminoethoxyethanol	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	>100	mg/l
	OECD 201 Alga, Growth Inhibition Test	Acute	ErC50 (growth rate)	72 hours Static	Algae	160	mg/l
	DIN DIN 38412 Part 15	Acute	LC50	96 hours Static	Fish	320	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Chronic	NOEC	3 hours Static	Bacteria	>1000	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Chronic	NOECr	72 hours Static	Algae	40	mg/l
Ethylene glycol	OECD 202 *Daphnia* sp. Acute Immobilisation Test	Acute	EC50	48 hours Static	Daphnia	>100	mg/l
	No official guidelines	Acute	ErC50 (growth rate)	96 hours	Algae	6500 to 13000	mg/l
	Unknown guidelines	Acute	LC50	96 hours Static	Fish	72860	mg/l
	ISO ISO 8192	Chronic	EC20	30 minutes Static	Bacteria	>1995	mg/l
	Unknown guidelines	Chronic	NOEC	7 days Static	Daphnia	8590	mg/l
	Unknown guidelines	Chronic	NOEC	7 days Static	Fish	15380	mg/l

Persistence and degradability

Product/ingredient name	Test	Period	Result

2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	OECD	28 days	1 %
Methyldiethanolamine	OECD 301A Ready Biodegradability - DOC Die-Away Test	18 days	96 %
Bis(Dimethylaminoethyl) Ether	OECD 302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	28 days	<10 %
	OECD Derived from OECD 301F (Biodegradation Test)	28 days	2 %
Dimethylaminoethoxyethanol	OECD 302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	28 days	10 to 20 %
	OECD 301F Ready Biodegradability - Manometric Respirometry Test	28 days	2 %
Ethylene glycol	OECD 301A Ready Biodegradability - DOC Die-Away Test	10 days	90 to 100 %

Conclusion/Summary : Bis(Dimethylaminoethyl) Ether — Not biodegradable

Dimethylaminoethoxyethanol — Not readily biodegradable.

Ethylene glycol — Readily biodegradable

Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	-	-	Not readily
Methyldiethanolamine	-	-	Readily
Bis(Dimethylaminoethyl) Ether	-	-	Not readily
Dimethylaminoethoxyethanol	-	-	Not readily
Ethylene glycol	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
2-[[2-(2-Dimethylamino) ethoxy] ethyl] methylamino] ethanol	-0.48	-	low
Methyldiethanolamine	-1.08	3.16	low
Bis(Dimethylaminoethyl) Ether	-0.34	-	low
2-Dimethylaminoethanol	-0.53	-	low
Dimethylaminoethoxyethanol	-0.778	-	low
Ethylene glycol	-1.36	-	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 : Amines, liquid, corrosive, n.o.s. (Dimethylethanolamine)

TDG Amines, liquid, corrosive, n.o.s. (Dimethylethanolamine)

Amines, liquid, corrosive, n.o.s. (Dimethylethanolamine)

: IMDG Amines, liquid, corrosive, n.o.s. (Dimethylethanolamine)

:

IATA :

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	UN2735	8	III		-
TDG Classification	UN2735	8	III		-
IMDG Classification	UN2735	8	III		**Emergency schedules (EmS)** F-A, S-B
IATA Classification	UN2735	8	III		**Passenger and Cargo Aircraft** Quantity limitation: 5 L Packaging instructions: 852 **Cargo Aircraft Only** Quantity limitation: 60 L Packaging instructions: 856

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.

Section 15. Regulatory information

TSCA 12(b) export notification : No ingredients listed.

SARA 311/312 : Immediate (acute) health hazard
Delayed (chronic) health hazard

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) :

Product name	Concentration %
Ethylene glycol	0.9999 - 5.0985

Clean Air Act - Ozone Depleting Substances (ODS) : This product does not contain nor is it manufactured with ozone depleting substances.

SARA 313 :

Product name	Concentration %
Ethylene glycol	0.9999 - 5.0985

Form R - Reporting requirements

CERCLA Hazardous substances :

Ingredient name	%	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
Ethylene glycol	5.0985	Listed	5000	98068
TRIMETHYLAMINE (TMA)	0.000075	Listed	100	133333333

State regulations

PENNSYLVANIA - RTK : Ethylene glycol, 2-Dimethylaminoethanol

California Prop 65 : This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Canadian regulations

CEPA DSL : At least one component is not listed.

WHMIS Classes : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
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**

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: **Norma ABNT-NBR 14725-2:2012**

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Section 15. Regulatory information

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

Section 16. Other information

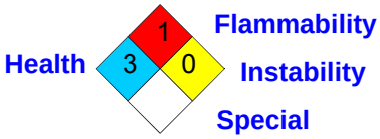
Hazardous Material Information System (U.S.A.) :

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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Notice to reader

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Section 16. Other information

While 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.

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

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