Diethylamine

sc-214887

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Diethylamine

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C4-H11-N, CH3CH2NHCH2CH3, "ethanamine, N-ethyl", "alkyl amine", "N, N-diethylamine", "diethyl amine"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	3		
Toxicity:	2		
Body Contact:	4		
Reactivity:	1		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK
Causes severe burns.
Risk of serious damage to eyes.
Harmful by inhalation, in contact with skin and if swallowed.
Highly flammable.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ The material can produce severe chemical burns within the oral cavity and gastrointestinal tract following ingestion.
■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
■ Ingestion of alkaline corrosives may produce burns around the mouth, ulcerations and swellings of the mucous membranes, profuse saliva production, with an inability to speak or swallow.
Both the esophagus and stomach may experience burning pain; vomiting and diarrhea may follow.
■ Ingestion of diethylamine may cause mouth and throat burns, nausea, vomiting abdominal pains, faintness and collapse.
Vomitus may contain blood.
■ Amines without benzene rings when swallowed are absorbed throughout the gut.
Corrosive action may cause damage throughout the gastrointestinal tract.

EYE
■ The material can produce severe chemical burns to the eye following direct contact. Vapors or mists may be extremely irritating.
■ If applied to the eyes, this material causes severe eye damage.
■ Direct eye contact with corrosive bases can cause pain and burns.
There may be swelling, epithelium destruction, clouding of the cornea and inflammation of the iris.
■ Vision may become misty and may halos appear several hours after workers are exposed to diethylamine.
The oedema of the corneal epithelium, which is primarily responsible for vision disturbances, clears after one or more days, depending on the severity of exposure.
■ Vapors of volatile amines irritate the eyes, causing excessive secretion of tears, inflammation of the conjunctiva and slight swelling of the cornea, resulting in "halos" around lights.
This effect is temporary, lasting only for a few hours.

SKIN
■ Skin contact with the material may be harmful; systemic effects may resultfollowing absorption.
■ The material can produce severe chemical burns following direct contactwith the skin.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
■ Volatile amine vapors produce irritation and inflammation of the skin.
Direct contact can cause burns.

INHALED
■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.
■ The material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Inhaling corrosive bases may irritate the respiratory tract.
Symptoms include cough, choking, pain and damage to the mucous membrane.
■ Exposure to moderately high concentrations of diethylamine vapour may cause pulmonary oedema with onset delayed.
This may necessitate 24 hour monitoring after exposure.
■ Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary edema.
■ Inhalation of amine vapors may cause irritation of the mucous membrane of the nose and throat, and lung irritation with respiratory distress and cough.
Swelling and inflammation of the respiratory tract is seen in serious cases; with headache, nausea, faintness and anxiety There may also be wheezing.

CHRONIC HEALTH EFFECTS
■ Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.
Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.
Repeated exposure to vapour of low concentration of diethylamine may result in skin changes, and allergic dermatitis responses.
Diethylamine may serve as a precursor for the formation of the reportedly carcinogenic N-nitrosamines. When liquids containing diethylamine were examined for nitrosation reactions under simulated conditions of the human stomach, N-nitrosodiethylamine was formed.
Secondary amines may react with nitrites to form potentially carcinogenicN-nitrosamines.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%

diethylamine	109-89-7	99

Section 4 - FIRST AID MEASURES

SWALLOWED
· For advice, contact a Poisons Information Center or a doctor at once. · Urgent hospital treatment is likely to be needed.

EYE
■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN
■ If skin or hair contact occurs: · Immediately flush body and clothes with large amounts of water, using safety shower if available. · Quickly remove all contaminated clothing, including footwear.

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested. Inhalation of vapors or aerosols (mists, fumes) may cause lung edema. Corrosive substances may cause lung damage (e.g.

NOTES TO PHYSICIAN
■ For acute or short-term repeated exposures to highly alkaline materials:
· Respiratory stress is uncommon but present occasionally because of soft tissue edema.
· Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung edema often do not manifest until a few hours have passed and they are aggravated by physical effort.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	189.766
Upper Explosive Limit (%):	10.1
Specific Gravity (water=1):	0.703-0.710 @ 20
Lower Explosive Limit (%):	1.8

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· May be violently or explosively reactive.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 1000 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Liquid and vapor are highly flammable.
· Severe fire hazard when exposed to heat, flame and/or oxidizers.
Combustion products include: carbon dioxide (CO2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material.
Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

FIRE INCOMPATIBILITY
■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION
Glasses:
Full face- shield.
Gloves:
1.PE/EVAL/PE 2.TEFLON 3.PVC
Respirator:
Type AK Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Remove all ignition sources.
· Clean up all spills immediately.
· Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
· Check regularly for spills and leaks.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Containers, even those that have been emptied, may contain explosive vapours.
· Do NOT cut, drill, grind, weld or perform similar operations on or near containers.
· DO NOT allow clothing wet with material to stay in contact with skin.
· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Contains low boiling substance:
Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.
· Check for bulging containers.
· Vent periodically.

RECOMMENDED STORAGE METHODS

· DO NOT use aluminium, galvanised or tin-plated containers.
Packing as supplied by manufacturer. Plastic containers may only be used if approved for flammable liquid.
· For low viscosity materials (i): Drums and jerricans must be of the non-removable head type. (ii): Where a can is to be used as an inner package, the can must have a screwed enclosure.
· For materials with a viscosity of at least 2680 cSt. (23 deg. C).

STORAGE REQUIREMENTS

· Store in original containers in approved flame-proof area.
· No smoking, naked lights, heat or ignition sources.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - Alberta Occupational Exposure Limits	diethylamine (Diethylamine)	5	15	15	45				
Canada - British Columbia Occupational Exposure Limits	diethylamine (Diethylamine)	5		15					Skin
US NIOSH Recommended Exposure Limits (RELs)	diethylamine (Diethylamine)	10	30	25	75				
US OSHA Permissible Exposure Levels (PELs) - Table Z1	diethylamine (Diethylamine)	25	75						
US ACGIH Threshold Limit Values (TLV)	diethylamine (Diethylamine)	5		15					TLV Basis: upper respiratory tract & eye irritation
US - Minnesota Permissible Exposure Limits (PELs)	diethylamine (Diethylamine)	10	30	25	75				
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	diethylamine (Diethylamine)	25	75						
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	diethylamine (Diethylamine)	10	30	25	75				

US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	diethylamine (Diethylamine)	10	30	25	75			
US - California Permissible Exposure Limits for Chemical Contaminants	diethylamine (Diethylamine)	5	15			C		
US - Idaho - Limits for Air Contaminants	diethylamine (Diethylamine)	25	75					
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	diethylamine (Diethylamine)	5	15	15	45			
US - Hawaii Air Contaminant Limits	diethylamine (Diethylamine)	10	30	25	75			
US - Alaska Limits for Air Contaminants	diethylamine (Diethylamine)	10	30	25	75			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	diethylamine (Diethylamine)	5		15				Skin
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	diethylamine (Diethylamine)	25	75	25	75			
US - Washington Permissible exposure limits of air contaminants	diethylamine (Diethylamine)	10		25				
US - Michigan Exposure Limits for Air Contaminants	diethylamine (Diethylamine)	10	30	25	75			
Canada - Prince Edward Island Occupational Exposure Limits	diethylamine (Diethylamine)	5		15				TLV Basis: upper respiratory tract & eye irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	diethylamine (Diethylamine)	25	75					
Canada - Nova Scotia Occupational Exposure Limits	diethylamine (Diethylamine)	5		15				TLV Basis: upper respiratory tract & eye irritation
US - Oregon Permissible Exposure Limits (Z-1)	diethylamine (Diethylamine)	25	75					

Canada - Northwest Territories Occupational Exposure Limits (English)	diethylamine (Diethylamine)	10	30	25	75

ENDOELTABLE

PERSONAL PROTECTION




RESPIRATOR

•Type AK Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

· Chemical goggles.
· Full face shield.

HANDS/FEET

■ Elbow length PVC gloves.
· When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.
NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

OTHER

· Overalls.
· PVC Apron.
· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS

■ For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Corrosive.
Alkaline.

State	Liquid	Molecular Weight	73.14
Melting Range (°F)	-58	Viscosity	Not Available
Boiling Range (°F)	132	Solubility in water (g/L)	Miscible
Flash Point (°F)	-15to -18	pH (1% solution)	<7
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	594	Vapor Pressure (mmHg)	189.766
Upper Explosive Limit (%)	10.1	Specific Gravity (water=1)	0.703-0.710 @ 20

Lower Explosive Limit (%)	1.8	Relative Vapor Density (air=1)	2.5
Volatile Component (%vol)	100	Evaporation Rate	Not available
Gas group	IIA		

diethylamine	
log Kow (Prager 1995):	0.58
log Kow (Sangster 1997):	0.58

APPEARANCE
Water white liquid with a strong fish odour. Soluble in water. Adding water to this amine causes release of heat (of solution) and may dramatically increase volatility.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
■ Avoid strong acids.
· Avoid contact with copper, aluminium and their alloys.
Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

diethylamine

TOXICITY AND IRRITATION
DIETHYLAMINE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 540 mg/kg	Skin (rabbit): 10 mg/24h-Mild
Dermal (rabbit) LD50: 820 mg/kg	Skin (rabbit): 500 mg open-Mild
Inhalation (rat) LC50: 4000 ppm/4h	Eye (rabbit): 0.05 mg open-SEVERE

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

CARCINOGEN

Diethylamine	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	A4
diethylamine	US - Rhode Island Hazardous Substance List	IARC	
TWAPPM~	US - Maine Chemicals of High Concern List	Carcinogen	A4

SKIN

diethylamine	US ACGIH Threshold Limit Values (TLV) - Skin	Skin Designation	Yes
diethylamine	US AIHA Workplace Environmental Exposure Levels (WEELs) - Skin	Notes	TLV Basis: upper respiratory tract & eye irritation
diethylamine	Canada - British Columbia Occupational Exposure Limits - Skin	Notation	Skin
diethylamine	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	S

diethylamine	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1, 3

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / EHS TRN A1a A1b A1 A2 B1 B2 C1 C2 C3 D1 D2 D3 E1 E2 E3 Cas No / RTECS No _____ Diethylam 621 240 0 0 R 2 NI 1 2 3 3C 3 DE 3 ine / CAS:109- 89- 7 /

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information
Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)
Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction
· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: None Hazard class or Division: 3
Identification Numbers: UN1154 PG: II
Label Codes: 3, 8 Special provisions: A3, IB2,
N34, T7,
TP1
Packaging: Exceptions: 150 Packaging: Non- bulk: 202
Packaging: Exceptions: 150 Quantity limitations: 1 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 5 L Vessel stowage: Location: E
aircraft only:
Vessel stowage: Other: 40
Hazardous materials descriptions and proper shipping names:
Diethylamine

Air Transport IATA:

UN/ID Number: 1154 Packing Group: II
Special provisions: None
Cargo Only
Packing Instructions: 363 Maximum Qty/Pack: 5 L
Passenger and Cargo Passenger and Cargo
Packing Instructions: Y340 Maximum Qty/Pack: 1 L
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 352 Maximum Qty/Pack: 0.5 L
Shipping Name: DIETHYLAMINE

Maritime Transport IMDG:
IMDG Class: 3 IMDG Subrisk: 8
UN Number: 1154 Packing Group: II
EMS Number: F-E,S-C Special provisions: None
Limited Quantities: 1 L
Shipping Name: DIETHYLAMINE

Section 15 - REGULATORY INFORMATION

diethylamine (CAS: 109-89-7) is found on the following regulatory lists;
"Canada - Alberta Occupational Exposure Limits","Canada - British Columbia Occupational Exposure Limits","Canada - Northwest Territories Occupational Exposure Limits (English)","Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada - Saskatchewan Industrial Hazardous Substances","Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","GESAMP/EHS Composite List - GESAMP Hazard Profiles","IMO IBC Code Chapter 17: Summary of minimum requirements","IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk","International Council of Chemical Associations (ICCA) - High Production Volume List","US - Alaska Limits for Air Contaminants","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California Permissible Exposure Limits for Chemical Contaminants","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Idaho - Limits for Air Contaminants","US - Massachusetts Oil & Hazardous Material List","US - Michigan Exposure Limits for Air Contaminants","US - Minnesota Hazardous Substance List","US - Minnesota Permissible Exposure Limits (PELs)","US - New Jersey Right to Know Hazardous Substances","US - Oregon Permissible Exposure Limits (Z-1)","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Permissible exposure limits of air contaminants","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US CWA (Clean Water Act) - List of Hazardous Substances","US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA High Production Volume Program Chemical List","US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US NIOSH Recommended Exposure Limits (RELs)","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Cumulative effects may result following exposure*.
■ Limited evidence of a carcinogenic effect*.
■ Possible skin sensitiser*.
* (limited evidence).

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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