DL-Lactonitrile

sc-234818

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
DL-Lactonitrile

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
C3-H5-N-O, CH3CH(OH)CN, lactonitrile, laktonitril, "propionitrile, 2-hydroxy-", DL-lactonitrile, "acetaldehyde cyanohydrin"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

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

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Harmful by inhalation.
Toxic if swallowed.
Very toxic in contact with skin.
Contact with acids liberates very toxic gas.
May cause long-term adverse effects in the environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
■ Nitrile poisoning exhibits similar symptoms to poisoning due to hydrogen cyanide.
The substances irritate the eyes and skin, and are absorbed quickly and completely through the skin.
■ Cyanide poisoning can cause increased saliva output, nausea without vomiting, anxiety, confusion, vertigo, dizziness, stiffness of the lower jaw, convulsions, spasm, paralysis, coma and irregular heartbeat, and stimulation of breathing followed by failure.
Often the skin becomes cyanosed (blue-gray), and this is often delayed.

EYE

■ Although the liquid is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

SKIN

■ Skin contact with the material may produce severely toxic effects; systemic effects may result following absorption and these may be fatal.
■ There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.
■ 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.

INHALED

■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.
■ Inhalation of vapours may cause drowsiness and dizziness.
This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
■ There is some evidence to suggest that the material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Inhalation hazard is increased at higher temperatures.
■ Inhalation of high concentrations of gas/vapor causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Chronic exposure to cyanides and certain nitriles may result in interference to iodine uptake by thyroid gland and its consequent enlargement. This occurs following metabolic conversion of the cyanide moiety to thiocyanate.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
2-hydroxypropionitrile	78-97-7	>98
stabiliser as		
phosphoric acid	7664-38-2	1

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

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.

NOTES TO PHYSICIAN
· Signs symptoms of acute cyanide poisoning reflect cellular hypoxia and are often non-specific.
· Cyanosis may be a late finding.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	<0.026 @ 25 C
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	0.983
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Combustible.
· Slight fire hazard when exposed to heat or flame.
Combustion products include: carbon dioxide (CO_2), nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

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:
Respirator:
Type AB-P Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
■ Environmental hazard - contain spillage.
· Remove all ignition sources.
· Clean up all spills immediately.
MAJOR SPILLS
■ Environmental hazard - contain spillage.
· 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
· 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.

RECOMMENDED STORAGE METHODS
· Lined metal can, Lined metal pail/drum

· Plastic pail.
For low viscosity materials
· Drums and jerricans must be of the non-removable head type.
· Where a can is to be used as an inner package, the can must have a screwed enclosure.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.

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
US - California Permissible Exposure Limits for Chemical Contaminants	2-hydroxypropionitrile (Cyanide, as CN)		5						
US - Minnesota Permissible Exposure Limits (PELs)	2-hydroxypropionitrile (Cyanides (as CN))			5					
Canada - British Columbia Occupational Exposure Limits	2-hydroxypropionitrile (Cyanide salts, as CN)						5		Skin
US - Idaho - Limits for Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5						
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5						
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5						
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5						
US - Alaska Limits for Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5						
US - Hawaii Air Contaminant Limits	2-hydroxypropionitrile (Cyanides (as CN))		5						(CAS (Varies with compound))
US - Washington Permissible exposure limits of air contaminants	2-hydroxypropionitrile (Cyanide (as CN))		5		10				

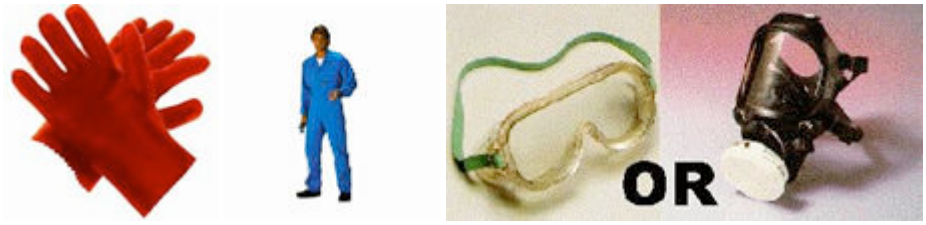
US - Oregon Permissible Exposure Limits (Z-1)	2-hydroxypropionitrile (Cyanides (as CN))	-	5				
US OSHA Permissible Exposure Levels (PELs) - Table Z1	2-hydroxypropionitrile (Cyanides (as CN))		5				
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	2-hydroxypropionitrile (Cyanides (as CN))				10	11	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	2-hydroxypropionitrile (Cyanides (as CN))		5				
Canada - Alberta Occupational Exposure Limits	phosphoric acid (Phosphoric acid)		1	3			
Canada - British Columbia Occupational Exposure Limits	phosphoric acid (Phosphoric acid)		1	3			
US - Minnesota Permissible Exposure Limits (PELs)	phosphoric acid (Phosphoric acid)		1	3			
US OSHA Permissible Exposure Levels (PELs) - Table Z1	phosphoric acid (Phosphoric acid)		1				
US ACGIH Threshold Limit Values (TLV)	phosphoric acid (Phosphoric acid)		1	3			TLV Basis: upper respiratory tract, eye & skin irritation
US NIOSH Recommended Exposure Limits (RELs)	phosphoric acid (Phosphoric acid)		1	3			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	phosphoric acid (Phosphoric acid)		1	3			
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1				

US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1		3		
US - California Permissible Exposure Limits for Chemical Contaminants	phosphoric acid (Phosphoric acid)		1		3		
US - Idaho - Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1				
US - Hawaii Air Contaminant Limits	phosphoric acid (Phosphoric acid)		1		3		
US - Alaska Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1		3		
US - Michigan Exposure Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1		3		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	phosphoric acid (Phosphoric acid)	-	1	-	3		
US - Washington Permissible exposure limits of air contaminants	phosphoric acid (Phosphoric acid)		1		3		
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	phosphoric acid (Phosphoric acid)		1		3		
Canada - Prince Edward Island Occupational Exposure Limits	phosphoric acid (Phosphoric acid)		1		3		TLV Basis: upper respiratory tract, eye & skin irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	phosphoric acid (Phosphoric acid)		1				
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	phosphoric acid (Phosphoric acid)		1		3		

US - Oregon Permissible Exposure Limits (Z-1)	phosphoric acid (Phosphoric acid)	-	1			
Canada - Northwest Territories Occupational Exposure Limits (English)	phosphoric acid (Phosphoric acid)		1	3		
Canada - Nova Scotia Occupational Exposure Limits	phosphoric acid (Phosphoric acid)		1	3		TLV Basis: upper respiratory tract, eye & skin irritation

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

• type ab-p filter of sufficient capacity.

EYE

· Chemical goggles.
· Full face shield.

HANDS/FEET

■ Elbow length PVC gloves.
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).
· 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) 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) 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.
· Neoprene gloves.

OTHER

· Overalls.
· Eyewash unit.

ENGINEERING CONTROLS

■ Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Contact with acids liberates very toxic gas.

State	Liquid	Molecular Weight	71.079
Melting Range (°F)	-40	Viscosity	Not Available
Boiling Range (°F)	217(50 mm Hg)	Solubility in water (g/L)	Miscible

Flash Point (°F)	170	pH (1% solution)	Not available
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	<0.026 @ 25 C
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	0.983
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	>1
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

APPEARANCE
Yellow to orange liquid; mixes with water, alcohol.

Section 10 - CHEMICAL STABILITY

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

STORAGE INCOMPATIBILITY
■ Avoid strong acids.
· Nitriles may polymerize in the presence of metals and some metal compounds.
· They are incompatible with acids; mixing nitriles with strong oxidizing acids can lead to extremely violent reactions.
· The covalent cyano group is endothermic and many organic nitriles are reactive under certain conditions; N-cyano derivatives are reactive or unstable.
· The majority of endothermic compounds are thermodynamically unstable and may decompose explosively under various circumstances of initiation.
· Many but not all endothermic compounds have been involved in decompositions, reactions and explosions and, in general, compounds with significantly positive values of standard heats of formation, may be considered suspect on stability grounds.
BRETHERICK L.: Handbook of Reactive Chemical Hazards.
Avoid reaction with oxidizing agents, bases and strong reducing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

2-hydroxypropionitrile

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

TOXICITY	IRRITATION
Oral (rat) LD50: 87 mg/kg	Nil Reported
Intraperitoneal (mouse) LD50: 15 mg/kg	
Dermal (rabbit) LD50: 20 mg/kg	
Inhalation (Rat) LC: 125 ppm/4h	
Subcutaneous (Rabbit) LD: 5.2 mg/kg	
Spastic paralysis, convulsions, ataxia, dyspnea, respiratory stimulation, body temperature decrease recorded.	

TOXICITY	IRRITATION
PHOSPHORIC ACID:	
Unreported (human) LDLo: 220 mg/kg	Skin (rabbit):595 mg/24h - SEVERE
Oral (rat) LD50: 1530 mg/kg	Eye (rabbit): 119 mg - SEVERE
Oral (rat) LD50: 3500 mg/kg*	[Monsanto]*
Dermal (rabbit) LD50: 1260 mg/kg*	

Inhalation (Rat) LC50: 25.5 mg/m³/4h

Inhalation (Mouse) LC50: 25.5 mg/m³/4h

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause severe 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. Repeated exposures may produce severe ulceration.

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.

phosphoric acid (85%)

CARCINOGEN

2-hydroxypropionitrile	US - Rhode Island Hazardous Substance List	IARC	
VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; IARC; NTP 11th ROC
phosphoric acid	US - Rhode Island Hazardous Substance List	IARC	

SKIN

2-hydroxypropionitrile	US - Washington Permissible exposure limits of air contaminants - Skin	Skin	X
2-hydroxypropionitrile	US - Hawaii Air Contaminant Limits - Skin Designation	Skin Designation	X
2-hydroxypropionitrile	US OSHA Permissible Exposure Levels (PELs) - Skin	Skin Designation	X

Section 12 - ECOLOGICAL INFORMATION

May cause long-term adverse effects in the environment.
This material and its container must be disposed of as hazardous waste.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
2-hydroxypropionitrile	HIGH	No Data Available	LOW	HIGH
phosphoric acid	HIGH	No Data Available	LOW	HIGH

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 _____ Lactonitr 887 411 0 NI 0 R 4 NI 2 4 (4) NI NI D 3 ile solution (80% or less) / CAS:78- 97- 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
Reactivity characteristic: use EPA hazardous waste number D003 (waste code R).

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 or consult manufacturer for recycling options.
· Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: G Hazard class or Division: 6.1
Identification Numbers: UN3276 PG: I
Label Codes: 6.1 Special provisions: 5, T14,
TP2, TP13,
TP27
Packaging: Exceptions: None Packaging: Non- bulk: 201
Packaging: Exceptions: None Quantity limitations: 1 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 30 L Vessel stowage: Location: B
aircraft only:
Vessel stowage: Other: 52 S.M.P.: YES
Hazardous materials descriptions and proper shipping names:
Nitriles, toxic, liquid, n.o.s.

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 3276 Packing Group: I
Special provisions: A3
Cargo Only
Packing Instructions: 30 L Maximum Qty/Pack: 658
Passenger and Cargo Passenger and Cargo
Packing Instructions: 1 L Maximum Qty/Pack: 652
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden
Shipping Name: NITRILES, TOXIC, LIQUID, N.O.S. *(CONTAINS
2-HYDROXYPROPIONITRILE)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 3276 Packing Group: I
EMS Number: F-A , S-A Special provisions: 274 315
Limited Quantities: 0
Shipping Name: NITRILES, TOXIC, LIQUID, N.O.S.(contains 2-hydroxypropionitrile)

Section 15 - REGULATORY INFORMATION

2-hydroxypropionitrile (CAS: 78-97-7) is found on the following regulatory lists;

"Canada Non-Domestic Substances List (NDSL)","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","OECD Representative List of High Production Volume (HPV) Chemicals","US - Massachusetts Oil & Hazardous Material List","US - Pennsylvania - Hazardous Substance List","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA High Production Volume Program Chemical List","US EPA Master Testing List - Index I Chemicals Listed","US EPA Master Testing List - Index II Chemicals Removed","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US SARA Section 302 Extremely Hazardous Substances","US Toxic Substances Control Act (TSCA) - Inventory","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Regulations for ingredients

phosphoric acid (CAS: 7664-38-2,16271-20-8) 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 - 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 Domestic Substances List (DSL)","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","OECD Representative List of High Production Volume (HPV) Chemicals","US - Alaska Limits for Air Contaminants","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)","US - California Permissible Exposure Limits for Chemical Contaminants","US - California Toxic Air Contaminant List Category II","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 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 Chemicals Additional List","US FDA Direct Food Substances Generally Recognized as Safe","US Food Additive Database","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) - Inventory"

Section 16 - OTHER INFORMATION

ND

Substance CAS Suggested codes 2- hydroxypropionitrile 78- 97- 7 T; R25 phosphoric acid 7664- 38- 2 T; R25 phosphoric acid 16271- 20- 8 T; R25

Ingredients with multiple CAS Nos

Ingredient Name CAS phosphoric acid 7664-38-2, 16271-20-8

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■ 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.

Issue Date: Jan-26-2010

Print Date:May-27-2011