Methylcyclohexanol

sc-235864

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Methylcyclohexanol

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
C7-H14-O, "cyclohexanol, methyl", methylcyclohexanol, hexahydro-cresol, hexahydromethyl-phenol, methylhexaline

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

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

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK
Harmful if swallowed.
Flammable.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ 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.
■ The minimum lethal oral doseof methylcyclohexanol in rabbits is between 1.
25 and 2 g/kg with rapid narcosis and convulsions preceding death.
■ Considered an unlikely route of entry in commercial/industrial environments.
The liquid may produce gastrointestinal discomfort and may be harmful if swallowed.
■ At sufficiently high doses the material may be hepatotoxic(i.
e.
■ At sufficiently high doses the material may be nephrotoxic(i.
e.

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
■ The material is not thought to be a skin irritant (as classified using animal models).
Temporary discomfort, however, may result from prolonged dermal exposures.
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ Repeated cutaneous application of large doses of methylcyclohexanol to rabbit skin caused irritation and thickening of the skin.
High doses (45 ml/application) produced weakness, tremour, narcosis and death.
■ 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 vapours may cause drowsiness and dizziness.
This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
■ 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.
■ Repeated inhalation of methylcyclohexanol by rabbits of 503 ppm 6 hours/day for 10 weeks produced salivation, conjunctival irritation and slight lethargy.
No signs of intoxication were evident at 232 ppm in animals exposed under identical conditions.
■ 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 solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS].

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
methyl cyclohexanol	25639-42-3	>98
as mixture of		
3-methyl cyclohexanol	591-23-1	
4-methyl cyclohexanol	589-91-3	
1-methyl cyclohexanol	590-67-0	
2-methyl cyclohexanol	583-59-5	

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: · Wash out immediately with fresh 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 contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
■ for poisons (where specific treatment regime is absent):
----------BASIC TREATMENT

· Establish a patent airway with suction where necessary.
· Watch for signs of respiratory insufficiency and assist ventilation as necessary.
Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not available
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	0.921
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA
· Water spray or fog.
· Alcohol stable foam.
· Dry chemical powder.
· Carbon dioxide.

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 500 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Liquid and vapor are flammable.
· Moderate fire hazard when exposed to heat or flame.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.

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

PERSONAL PROTECTION
Glasses:
Chemical goggles.
Gloves:
Respirator:
Type A Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Remove all ignition sources.
· Clean up all spills immediately.
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.
· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of overexposure occurs.

RECOMMENDED STORAGE METHODS
■ 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 flammable liquid storage area.

· DO NOT store in pits, depressions, basements or areas where vapors may be trapped.

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	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol (meta- and para-isomer mixture))	50	235						
US - Minnesota Permissible Exposure Limits (PELs)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235						
Canada - British Columbia Occupational Exposure Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50							
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235						
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	100	470						
US - Idaho - Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	100	470						
US OSHA Permissible Exposure Levels (PELs) - Table Z1	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	100	470						
US - Hawaii Air Contaminant Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235	75	350				
US - Washington Permissible exposure limits of air contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50		75					
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235	75	350				
US - Oregon Permissible Exposure Limits (Z-1)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235						Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

US - Michigan Exposure Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235			
US - Alaska Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235			
US ACGIH Threshold Limit Values (TLV)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50				TLV Basis: upper respiratory tract & eye irritation
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	234			
US NIOSH Recommended Exposure Limits (RELs)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235			
Canada - Alberta Occupational Exposure Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	234			
Canada - Northwest Territories Occupational Exposure Limits (English)	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50	235	75	350	
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50		60		
Canada - Nova Scotia Occupational Exposure Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50				TLV Basis: upper respiratory tract & eye irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	100	470			
Canada - Prince Edward Island Occupational Exposure Limits	methyl cyclohexanols (mixture of isomers) (Methylcyclohexanol)	50				TLV Basis: upper respiratory tract & eye irritation

ENDOELTABLE

PERSONAL PROTECTION




RESPIRATOR
Type A Filter of sufficient capacity
Consult your EHS staff for recommendations

EYE
· Safety glasses with side shields.
· Chemical goggles.

HANDS/FEET
■ Wear chemical protective gloves, eg. PVC.
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.

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.

State	Liquid	Molecular Weight	114.21
Melting Range (°F)	Not available	Viscosity	Not available
Boiling Range (°F)	340- 343	Solubility in water (g/L)	Miscible
Flash Point (°F)	106	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Not available
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	0.921
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	> 1
Volatile Component (%vol)	Not available	Evaporation Rate	Not available
Gas group	IIA		

APPEARANCE
Colourless, viscous liquid with aromatic, menthol-like odour; mixes with water (3%-4%) and most organic solvents (e.g., alcohol, benzene and chloroform).

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.

· Product is considered stable.

STORAGE INCOMPATIBILITY

■ 2-Methylcyclohexanol:
· reacts with strong oxidisers to produce fire or explosion
· reacts with boranes, alkalis, aliphatic amines, amides, nitric acid, sulfuric acid
· attacks some plastics, rubber and coatings.
Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

methyl cyclohexanols (mixture of isomers)

TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
4-METHYL CYCLOHEXANOL:
1-METHYL CYCLOHEXANOL:
2-METHYL CYCLOHEXANOL:
3-METHYL CYCLOHEXANOL:
■ 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.
4-METHYL CYCLOHEXANOL:
1-METHYL CYCLOHEXANOL:
METHYL CYCLOHEXANOLS (MIXTURE OF ISOMERS):
■ No significant acute toxicological data identified in literature search.
METHYL CYCLOHEXANOLS (MIXTURE OF ISOMERS):

TOXICITY	IRRITATION
Inhalation (human) TCLo: 500 ppm	Nil Reported
Oral (rat) LD50: 1660 mg/kg	
Dermal (rabbit) LDLo: 6800 mg/kg	

TOXICITY	IRRITATION
3-METHYL CYCLOHEXANOL:	
Intramuscular (rat) LD50: 1000 mg/kg	Nil Reported
2-METHYL CYCLOHEXANOL:	
Intramuscular (mouse) LD50: 1000 mg/kg	Nil Reported

CARCINOGEN

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

Section 12 - ECOLOGICAL INFORMATION

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

Ecotoxicity

Ingredient	Persistence: Water/Soil Persistence: Air	Bioaccumulation	Mobility
3-methyl cyclohexanol	LOW	LOW	HIGH
4-methyl cyclohexanol	HIGH	LOW	HIGH

1-methyl cyclohexanol	HIGH	LOW	HIGH
2-methyl cyclohexanol	HIGH	LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

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

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: UN2617 PG: III
Label Codes: 3 Special provisions: B1, IB3,
T2, TP1
Packaging: Exceptions: 150 Packaging: Non- bulk: 203
Packaging: Exceptions: 150 Quantity limitations: 60 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 220 L Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None
COMBUSTIBLE LIQUID
A flammable liquid with a flash point at or above 38 deg.C (100 deg.F) that does not meet the definition of any other hazard class may be
reclassed as a combustible liquid. This provision does not apply to transportation by vessel or aircraft, except where other means of
transportation is impracticable. An elevated temperature material that meets the definition of a Class 3 material because it is intentionally heated and offered for transportation or transported at or above its flash point may not be reclassed as a combustible liquid.
Refer to 49 CFR 173.120(b)(2)

Air Transport IATA:

ICAO/IATA Class: 3 ICAO/IATA Subrisk: None
UN/ID Number: 2617 Packing Group: III
Special provisions: None
Cargo Only
Packing Instructions: 220 L Maximum Qty/Pack: 60 L
Passenger and Cargo Passenger and Cargo
Packing Instructions: 366 Maximum Qty/Pack: 355
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 10 L Maximum Qty/Pack: Y344
Shipping Name: METHYLCYCLOHEXANOLS

Maritime Transport IMDG:

IMDG Class: 3 IMDG Subrisk: None
UN Number: 2617 Packing Group: III
EMS Number: F-E , S-D Special provisions: None
Limited Quantities: 5 L
Shipping Name: METHYLCYCLOHEXANOLS flammable

Section 15 - REGULATORY INFORMATION

methyl cyclohexanols (mixture of isomers) (CAS: 25639-42-3) is found on the following regulatory lists;

"Canada - British Columbia Occupational Exposure 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)","US - Alaska Limits for Air Contaminants","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 - 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 - 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 OSHA Permissible Exposure Levels (PELs) - Table Z1"

Regulations for ingredients

3-methyl cyclohexanol (CAS: 591-23-1) is found on the following regulatory lists;

"Canada Non-Domestic Substances List (NDSL)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","US Toxic Substances Control Act (TSCA) - Inventory"

4-methyl cyclohexanol (CAS: 589-91-3,7731-28-4,7731-29-5) is found on the following regulatory lists;

"Canada Non-Domestic Substances List (NDSL)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","US Toxic Substances Control Act (TSCA) - Inventory"

1-methyl cyclohexanol (CAS: 590-67-0) is found on the following regulatory lists;

"Canada - Alberta 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 Occupational Health and Safety Regulations - Contamination Limits","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US NIOSH Recommended Exposure Limits (RELs)"

2-methyl cyclohexanol (CAS: 583-59-5,7443-52-9,7443-70-1) is found on the following regulatory lists;

"Canada Domestic Substances List (DSL)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","OECD Representative List of High Production Volume (HPV) Chemicals","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

ND

Substance CAS Suggested codes 4- methyl cyclohexanol 589- 91- 3 Xi; R38 4- methyl cyclohexanol 7731- 28- 4 Xi; R38 4- methyl cyclohexanol 7731- 29- 5 Xi; R38 1- methyl cyclohexanol 590- 67- 0 R52/53

Ingredients with multiple CAS Nos

Ingredient Name CAS 4-methyl cyclohexanol 589-91-3, 7731-28-4, 7731-29-5 2-methyl cyclohexanol 583-59-5, 7443-52-9, 7443-70-1

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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.

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