

3-Methyl-1-butanol

sc-231818

Material Safety Data Sheet



The Power is Question

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

3-Methyl-1-butanol

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

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EMERGENCY:

ChemWatch
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(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS

C5-H12-O, C5-H11-OH, CH₃CH(CH₃)CH₂CH₂OH, "primary isoamyl alcohol", iso-pentylalcohol, "isopentyl alcohol", 3-methyl-1-butanol, "isobutyl carbinol", "fermentation amyl alcohol", "3-methyl butanol", 3-methyl-butan-1-ol, "Merck Isoamyl Alcohol GR For Analysis ACS"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

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

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



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

Irritating to respiratory system.
 HARMFUL - May cause lung damage if swallowed.
 Harmful by inhalation and if swallowed.
 Flammable.
 Repeated exposure may cause skin dryness and cracking.

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.
 - Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733).
 - Ingestion of 30 ml of primary isoamyl alcohol was lethal for adults. Half the rabbits given an oral dose of 0.7 g/kg primary isoamyl alcohol showed stupor and loss of voluntary movement.
 - Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed.
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- Overexposure to non-ring alcohols causes nervous system symptoms. These include headache, muscle weakness and inco-ordination, giddiness, confusion, delirium and coma.
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EYE

- Ingestion of 30 ml of primary isoamyl alcohol was lethal for adults. Half the rabbits given an oral dose of 0.7 g/kg primary isoamyl alcohol showed stupor and loss of voluntary movement.
- There is some evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

SKIN

- Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.
- There is some evidence to suggest that the material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.
- Most liquid alcohols appear to act as primary skin irritants in humans. Significant percutaneous absorption occurs in rabbits but not apparently in man.
- 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 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.
 - Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
 - Adult volunteers exposed to primary isoamyl alcohol at 100 ppm for 3 to 5 minutes showed ocular and upper respiratory tract irritation.
 - Aliphatic alcohols with more than 3-carbons cause headache, dizziness, drowsiness, muscle weakness and delirium, central depression, coma, seizures and behavioral changes. Secondary respiratory depression and failure, as well as low blood pressure and irregular heart rhythms, may follow.
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- 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

- Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.
- Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
- 27 ml of Primary isoamyl alcohol was delivered by gavage to rats (0.1 mg/kg twice weekly). Malignant tumours (myeloid leukaemia, liver cell carcinomas and antestomach carcinoma) occurred in some treated rats.
- When 0.4 ml/kg was injected subcutaneously into rats, once a week for a total dose of 3.8 ml, malignant tumours of the liver, spleen, antestomach and retroperitoneal region.
- 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	%
iso-amyl alcohol	123-51-3	>97

Section 4 - FIRST AID MEASURES

SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. · Avoid giving milk or oils. · Avoid giving alcohol. · If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

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

■ Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically.

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To treat poisoning by the higher aliphatic alcohols:

- Gastric lavage with copious amounts of water.
- It may be beneficial to instill 60 ml of mineral oil into the stomach.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	2.025 @ 20C
Upper Explosive Limit (%):	10.0
Specific Gravity (water=1):	0.82-0.832
Lower Explosive Limit (%):	1.9

EXTINGUISHING MEDIA

- Alcohol stable foam.
- Dry chemical powder.

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 flammable.
- Moderate fire hazard when exposed to heat or flame.

Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), other pyrolysis products typical of burning organic material.

WARNING: Long standing in contact with air and light may result in the formation of potentially explosive peroxides.

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.
- DO NOT allow clothing wet with material to stay in contact with skin.

The substance accumulates peroxides which may become hazardous only if it evaporates or is distilled or otherwise treated to concentrate the peroxides. The substance may concentrate around the container opening for example.

Purchases of peroxidisable chemicals should be restricted to ensure that the chemical is used completely before it can become peroxidised.

- A responsible person should maintain an inventory of peroxidisable chemicals or annotate the general chemical inventory to indicate which chemicals are subject to peroxidation. An expiration date should be determined. The chemical should either be treated to remove peroxides or disposed of before this date.
- The person or laboratory receiving the chemical should record a receipt date on the bottle. The individual opening the container should add an opening date.
- Unopened containers received from the supplier should be safe to store for 18 months.
- Opened containers should not be stored for more than 12 months.
- 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.

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- 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/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
Canada - Alberta Occupational Exposure Limits	iso-amyl alcohol (Isoamyl alcohol)	100	361	125	451				
Canada - British Columbia Occupational Exposure Limits	iso-amyl alcohol (Isoamyl alcohol)	100		125					
US NIOSH Recommended Exposure Limits (RELs)	iso-amyl alcohol (Isoamyl alcohol (primary))	100	360	125	450				
US OSHA Permissible Exposure Levels (PELs) - Table Z1	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360						
US ACGIH Threshold Limit Values (TLV)	iso-amyl alcohol (Isoamyl alcohol)	100		125					TLV Basis: eye & upper respiratory tract irritation
US - Minnesota Permissible Exposure Limits (PELs)	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360	125	450				
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	iso-amyl alcohol (Isomyl alcohol (primary and secondary))	100	360						

US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	iso-amyl alcohol (Isomyl alcohol (primary and secondary))	100	360	125	450	
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360	125	450	
US - California Permissible Exposure Limits for Chemical Contaminants	iso-amyl alcohol (Isoamyl alcohol; 3-methylbutanol)	100	360	125	450	
US - Idaho - Limits for Air Contaminants	iso-amyl alcohol (Isomyl alcohol (primary and secondary))	100	360			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	iso-amyl alcohol (Isoamyl alcohol)	100	361	125	452	
US - Hawaii Air Contaminant Limits	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360	125	450	
US - Alaska Limits for Air Contaminants	iso-amyl alcohol (Isoamyl alcohol (Primary and secondary))	100	360	125	450	
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	iso-amyl alcohol (Isoamyl alcohol)	100		125		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	iso-amyl alcohol (Isoamyl alcohol)	100	360	125	450	
US - Washington Permissible exposure limits of air contaminants	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100		125		
US - Michigan Exposure Limits for Air Contaminants	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360	125	450	
Canada - Prince Edward Island Occupational Exposure Limits	iso-amyl alcohol (Isoamyl alcohol)	100		125		TLV Basis: eye & upper respiratory tract irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	iso-amyl alcohol (Isomyl alcohol primary)	100	360			

Canada - Nova Scotia Occupational Exposure Limits	iso-amyl alcohol (Isoamyl alcohol)	100	125	TLV Basis: eye & upper respiratory tract irritation	
US - Oregon Permissible Exposure Limits (Z-1)	iso-amyl alcohol (Isoamyl alcohol (primary and secondary))	100	360		
Canada - Northwest Territories Occupational Exposure Limits (English)	iso-amyl alcohol (Isoamyl alcohol)	100	360	125	450

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.

Does not mix with water.

Floats on water.

State	Liquid	Molecular Weight	88.15
Melting Range (°F)	32 117.2	Viscosity	Not Available

Boiling Range (°F)	269.6	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	102.2- 113	pH (1% solution)	Not applicable.
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	656.6	Vapor Pressure (mmHg)	2.025 @ 20C
Upper Explosive Limit (%)	10.0	Specific Gravity (water=1)	0.82-0.832
Lower Explosive Limit (%)	1.9	Relative Vapor Density (air=1)	3.0
Volatile Component (%vol)	100	Evaporation Rate	0,2 BuAc=1
Gas group	IIA		

APPEARANCE

Colourless flammable liquid; slightly soluble in water. Disagreeable odour. Mixes with alcohol, ether, chloroform and glacial acetic acid.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

STORAGE INCOMPATIBILITY

■ Isoamyl alcohol:

- reacts violently with strong oxidisers
- reacts violently with aliphatic amines, alkalis, ammonium persulfate, boranes, bromine dioxide, isocyanates, nitric acid, perchlorates, permanganates, peroxides, sodium peroxide, sulfuric acid, uranium fluoride
- may generate electrostatic charges due to low conductivity.

Avoid storage with strong acids, acid chlorides, acid anhydrides, oxidizing agents.

Secondary alcohols and some branched primary alcohols may produce potentially explosive peroxides after exposure to light and/ or heat.

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

Section 11 - TOXICOLOGICAL INFORMATION

ISO-AMYL ALCOHOL

TOXICITY AND IRRITATION

ISO-AMYL ALCOHOL:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 1300 mg/kg	Eye (human): 150 ppm
Inhalation (human) TCLo: 150 ppm	SKIN (RABBIT): 20 MG/24H - Moderate
Intravenous (mouse) LD50: 234 mg/kg	EYE (RABBIT): 20 MG/24H - Moderate
Oral (rabbit) LD50: 3438 mg/kg	
Dermal (rabbit) LD50: 3212 mg/kg	

■ 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.

Olfaction effects, conjunctival irritation, antipsychotic effects, respiratory tract changes, fatty liver degeneration, urinary tract changes, blood changes recorded.

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
iso-amyl alcohol	LOW		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 _____
 _____ 3- 965 126 1 1 1 (R) 1 0 1 0 (2) 2 2 FED 2 Methyl- 1- butanol / CAS:123- 51- 3 / EL5425000

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)

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: UN1105 PG: III

Label Codes: 3 Special provisions: B1, B3,

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 reclassified 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 reclassified 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: 1105 Packing Group: III

Special provisions: A3

Cargo Only

Packing Instructions: 310 Maximum Qty/Pack: 220 L

Passenger and Cargo Passenger and Cargo

Packing Instructions: 309 Maximum Qty/Pack: 60 L
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y309 Maximum Qty/Pack: 10 L
Shipping Name: PENTANOLS

Maritime Transport IMDG:

IMDG Class: 3 IMDG Subrisk: None
UN Number: 1105 Packing Group: III
EMS Number: F-E , S-D Special provisions: 223
Limited Quantities: 5 L
Shipping Name: PENTANOLS

Section 15 - REGULATORY INFORMATION

iso-amyl alcohol (CAS: 123-51-3) 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 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 Fragrance Association (IFRA) Survey: Transparency List", "OECD Representative List of High Production Volume (HPV) Chemicals", "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 - 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 DOE Temporary Emergency Exposure Limits (TEELs)", "US DOT Coast Guard Bulk Hazardous Materials - List of Flammable and Combustible Bulk Liquid Cargoes", "US Food Additive Database", "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

LIMITED EVIDENCE

- Potentially explosive peroxides may form on standing.*.
- Cumulative effects may result following exposure*.
- May produce discomfort of the eyes and skin*.
- Vapours potentially cause drowsiness and dizziness*.

* (limited evidence).

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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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