2-Methyltetrahydrofuran

sc-238158

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
2-Methyltetrahydrofuran

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
C5-H10-O, "furan, 2-methyl-tetrahydro-", "tetrahydrofuran, 2-methyl", 2-methyloxolane, 2-methyltetrahydrofuran, tetrahydrosilvan, "methyl THF", MTHF

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	3		
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

Possible risk of irreversible effects.
Irritating to eyes and respiratory system.
Highly flammable.
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Although ingestion is not thought to produce harmful effects, the material may still be damaging to the health of the individual following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident.

EYE

■ 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

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives .
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ The material may accentuate any pre-existing dermatitis condition.
■ 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

■ The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.
■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.
■ Overexposure to tetrahydrofuran, by inhalation, may result in irritation of the mucous membranes and may produce coughing, chest pains, nausea, dizziness, headache and narcosis. Exposure to high concentrations can affect the central nervous system due to the strong narcotic effect of the material. Concentrations greater than 25000 ppm were reported to produce anaesthesia in animals. Anaesthetic properties are poor as onset is delayed and recovery is slow. Pronounced hypotension and marked respiratory hypernea accompany narcosis. Other symptoms include muscular hypotonia and disappearance of corneal reflexes, followed by coma and death.
■ There is some evidence to suggest that this material can cause, if inhaled once, irreversible damage of organs.

CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
Strong evidence exists that the substance may cause irreversible but non-lethal mutagenic effects following a single exposure.
Exposure to the material may result in a possible risk of irreversible effects. The material may produce mutagenic effects in man. This concern is raised, generally, on the basis of
appropriate studies using mammalian somatic cells in vivo. Such findings are often supported by positive results from in vitro mutagenicity studies.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Exposure to the material may cause concerns for human fertility, on the basis that similar materials provide some evidence of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects, but which are not a secondary non-specific consequence of other toxic effects.
.
Oil may contact the skin or be inhaled. Extended exposure can lead to eczema, inflammation of hair follicles, pigmentation of the face and warts on the soles of the feet.
Repeated exposure to tetrahydrofuran (THF) and its congeners has been associated with cytolytic hepatitis and fatty degeneration of the liver. Inhalation of THF at concentrations greater than 3000 ppm, 8 hours/day for 20 days, produced irritation and evidence for hepatic and renal injury in animals. Male rats inhaling more than 5000 ppm THF for 12 weeks, 4 hours/day showed signs of systemic intoxication, skin and respiratory irritation, liver function disturbance and abnormalities in glucose function. Muscle acetylcholinesterase activity increased in a concentration-dependent manner in male rats that inhaled 200 ppm for 18 weeks, 6 hours/day. Hepatic protein and mixed function oxidase activity also increased. At 2000 ppm, liver function was inhibited. In a 13-week inhalation study, ataxia was reported in rats at 5000 ppm and narcosis in mice at 1800 ppm. Hepatocytomegaly developed in mice of both sexes at 5000 ppm while uterine atrophy and degeneration of the adrenal cortex was found in female mice. A case history suggests that interaction of THF and endoflurane (an anaesthetic) may provoke epileptic seizures following surgery. The parent compound of tetrahydrofuran, furan, is carcinogenic in rats based on an increased incidence of cholangiocarcinoma and hepatocellular neoplasms of the liver and increased incidences of mononuclear cell leukaemia. In male and female mice, furan induced hepatocellular neoplasms and benign pheochromocytomas of the of the adrenal gland. 1,4-Dioxane, another cyclic ether solvent, is carcinogenic in rats and guinea pigs, following oral administration, inducing malignant tumours of the liver in rats and malignant tumours of the liver of the gall-bladder in guinea pigs. 1,4-Dioxane is a promoter in two stage skin carcinogenic studies in mice. In a two-year inhalation study * there was evidence of carcinogenic activity of THF, in male rats, based on increased incidences of renal tube adenoma or carcinoma (combined) and in female mice based on an increased incidence of hepatocellular neoplasms. There was no evidence of carcinogenic activity in female rats or male mice exposed to 200, 600 and 1800 ppm THF by inhalation. * National Toxicology

Program Technical Report Series No. 475.
Cyclic ethers can cause cancers, especially of the liver.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
methyltetrahydrofuran	96-47-9	>98
stabilised, for example, with		
2,6-di-tert-butyl-4-methylphenol	128-37-0	1

Section 4 - FIRST AID MEASURES

SWALLOWED
· Immediately give a glass of water. · First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

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
■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not available
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	0.86
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.
· 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 highly flammable.
· Severe fire hazard when exposed to heat, flame and/or oxidizers.
Combustion products include: carbon dioxide (CO_2), 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.
CARE: Water in contact with hot liquid may cause foaming and a steam explosion with wide scattering of hot oil and possible severe burns.
Foaming may cause overflow of containers and may result in possible fire.

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-P 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.
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 exposure 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 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	2,6-di-tert-butyl-4-methylphenol (Butylated hydroxytoluene (BHT) (2,6-Di-tert-butyl-p-cresol))		10						
Canada - British Columbia Occupational Exposure Limits	2,6-di-tert-butyl-4-methylphenol (Butylated hydroxytoluene (BHT), Inhalable, (2,6-Di-tert-butyl-p-cresol))		2 (V)						
US ACGIH Threshold Limit Values (TLV)	2,6-di-tert-butyl-4-methylphenol (Butylated hydroxytoluene [BHT])		2						TLV Basis: upper respiratory tract irritation
US NIOSH Recommended Exposure Limits (RELs)	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10						
US - Minnesota Permissible Exposure Limits (PELs)	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10						
US - Vermont Permissible Exposure Limits Table Z-1-A Final	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10						

Rule Limits for Air Contaminants							
US - California Permissible Exposure Limits for Chemical Contaminants	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10				
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	2,6-di-tert-butyl-4-methylphenol (2-6Di-tert-butyl-p-cresol)		10				
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)				10		
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol (butylated hydroxytoluene or BHT) (inhalable fraction++ and vapour))		2		4		
US - Hawaii Air Contaminant Limits	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10		20		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	2,6-di-tert-butyl-4-methylphenol (2,6-Ditert,butyl-p-cresol)	-	10	-	20		
US - Washington Permissible exposure limits of air contaminants	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10		20		
US - Alaska Limits for Air Contaminants	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol)		10				
Canada - Nova Scotia Occupational Exposure Limits	2,6-di-tert-butyl-4-methylphenol (Butylated hydroxytoluene [BHT])		2				TLV Basis: upper respiratory tract irritation
Canada - Prince Edward Island Occupational Exposure Limits	2,6-di-tert-butyl-4-methylphenol (Butylated hydroxytoluene [BHT])		2				TLV Basis: upper respiratory tract irritation
US - Michigan Exposure Limits for Air Contaminants	2,6-di-tert-butyl-4-methylphenol (2,6-Di-tert-butyl-p-cresol (Butylated hydroxytoluene))		10				
Canada - Northwest Territories Occupational Exposure Limits (English)	2,6-di-tert-butyl-4-methylphenol (2,6-Ditert-butyl-p-cresol)		10		20		

ENDOELTABLE

The following materials had no OELs on our records

• methyltetrahydrofuran: CAS:96-47-9 CAS:25265-68-3

PERSONAL PROTECTION




RESPIRATOR

Type A-P 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	86.13
Melting Range (°F)	-212.8	Viscosity	Not Available
Boiling Range (°F)	172.4- 176	Solubility in water (g/L)	Miscible
Flash Point (°F)	12.002	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)	0.86
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	2.9
Volatile Component (%vol)	100	Evaporation Rate	Fast

APPEARANCE

Colourless liquid with ether-like odour; mixes with water (15 g/100 ml). Solubility in water increases with a decrease in temperature. Soluble in most organic solvents.

log Kow 4.17

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

■ Presence of a stabilizing inhibitor prevents/retards peroxide formation.
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY

■ CARE: Water in contact with heated material may cause foaming or a steam explosion with possible severe burns from wide scattering of hot material. Resultant overflow of containers may result in fire.
· Avoid strong acids, bases.
· The unhindered oxygen atom found on cyclic ethers such as the epoxides, oxetanes, furans, dioxanes and pyrans, carries two unshared pairs of electrons - a structure which favors the formation of coordination complexes and the solvation of cations.
· Cyclic ethers are used as important solvents, as chemical intermediate and as monomers for ring-opening polymerization.
· They are unstable at room temperature due to possibility of peroxide formation; stabiliser is sometimes needed for storage and transportation.
NOTE: Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe.
Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

METHYLTETRAHYDROFURAN

TOXICITY AND IRRITATION

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

TOXICITY	IRRITATION
Inhalation (rat) LC50: 6000 ppm/4h	Eye (rabbit): 500 mg/24h - Mild
Dermal (rabbit) LD50: 4500 mg/kg	
Inhalation (human) TCLo: 25 ppm	

TOXICITY	IRRITATION
2,6-DI-TERT-BUTYL-4-METHYLPHENOL:	
Oral (woman) TDLo: 80 mg/kg	Skin (human): 500 mg/48h - Mild
Oral (rat) LD50: 890 mg/kg	Skin (rabbit):500 mg/48h-Moderate
	Eye (rabbit): 100 mg/24h-Moderate

■ 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.

For hindered phenols:

Acute oral and dermal toxicity data are available for all but two of the substances in the group. The data show that acute	
toxicity of these substances is low.	
Mutagenicity. Data from bacterial reverse mutation assays and in vitro and in vivo chromosome aberration studies were reviewed. All assays, with and without metabolic activation, were negative. The weight of evidence for mutagenic potential for this category indicates these substances are not mutagenic.	
In Vitro Chromosome Aberration Studies. In vitro chromosome aberration studies are available for several members	All except 2,6-di-tert-butyl-p-cresol were negative
In Vivo Chromosome Aberration Studies. In vivo studies evaluating chromosome damage are available for six of the hindered phenols. All in vivo evaluations were negative.	
Repeated Dose Toxicity. Repeated dose toxicity data of approximately three months (90-day, 12- and 13-week) are available for most of the substances in this group. The liver was the target organ in rats for almost all of the substances with subchronic toxicity data in that species. Other target organs included thyroid and kidney and mesenteric lymph nodes. NOAELs in rats ranged from 100 ppm (approximately 5 mg/kg/day) to 10,000 ppm (500 mg/kg/day	
Carcinogenicity:	Data is available for 2,6-di-tert-butyl-p-cresol (128-37-0); and 4,4'-thiobis-6-(t-butyl-m-cresol) (96-69-5). Liver adenomas were reported for 2,6-di-tert-butyl-p-cresol (128-37-0) and a NOAEL was established for the study at 25 mg/kg/day. 4,4'-Thiobis-6-(t-butyl-m-cresol) (96-69-5) was not carcinogenic in rats or mice, but the kidney was identified as a target organ in female rats.
The substance is classified by IARC as Group 3:	
NOT classifiable as to its carcinogenicity to humans.	
Evidence of carcinogenicity may be inadequate or limited in animal testing.	
NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.	

Section 12 - ECOLOGICAL INFORMATION

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
methyltetrahydrofuran	LOW		LOW	HIGH
2,6-di-tert-butyl-4-methylphenol	HIGH		LOW	LOW

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 _____ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ [Heavy 226 282 5 2 (2) NR 1 NI 0 0 (1) 1 1 FE 2 Oxo 6 5 Fraction] / CAS:96- 47- 9 /

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: UN2536 PG: II
Label Codes: 3 Special provisions: IB2, T4,
TP1
Packaging: Exceptions: 150 Packaging: Non- bulk: 202
Packaging: Exceptions: 150 Quantity limitations: 5 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 60 L Vessel stowage: Location: B
aircraft only:
Vessel stowage: Other: None
Hazardous materials descriptions and proper shipping names:
Methyltetrahydrofuran

Air Transport IATA:

ICAO/IATA Class: 3 ICAO/IATA Subrisk: None
UN/ID Number: 2536 Packing Group: II
Special provisions: None
Cargo Only
Packing Instructions: 307 Maximum Qty/Pack: 60 L
Passenger and Cargo Passenger and Cargo
Packing Instructions: 305 Maximum Qty/Pack: 5 L
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y305 Maximum Qty/Pack: 1 L
Shipping Name: METHYLTETRAHYDROFURAN

Maritime Transport IMDG:

IMDG Class: 3 IMDG Subrisk: None
UN Number: 2536 Packing Group: II
EMS Number: F-E , S-D Special provisions: None
Limited Quantities: 1 L
Shipping Name: METHYLTETRAHYDROFURAN

Section 15 - REGULATORY INFORMATION

methyltetrahydrofuran (CAS: 96-47-9,25265-68-3) is found on the following regulatory lists;
"Canada Ingredient Disclosure List (SOR/88-64)","Canada Non-Domestic Substances List (NDSL)","US - Pennsylvania - Hazardous Substance List","US DOE Temporary Emergency Exposure Limits (TEELs)","US Toxic Substances Control Act (TSCA) - Inventory"

Regulations for ingredients

2,6-di-tert-butyl-4-methylphenol (CAS: 128-37-0) 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 Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Ingredient Disclosure List (SOR/88-64)","Canada National Pollutant Release Inventory (NPRI)","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 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 - 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 - 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 ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US Cosmetic Ingredient Review (CIR) Cosmetic ingredients found safe as used","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA High Production Volume Program Chemical List","US FDA Direct Food Substances Generally Recognized as Safe","US FDA Indirect Food Additives: Adhesives and Components of Coatings -

Substances for Use Only as Components of Adhesives - Adhesives","US Food Additive Database","US NFPA 499 Combustible Dusts","US NIOSH Recommended Exposure Limits (RELs)","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

ND

Substance CAS Suggested codes methyltetrahydrofuran 96- 47- 9 methyltetrahydrofuran 25265- 68- 3 2, 6- di- tert- butyl- 4- methylphenol 128- 37- 0

Ingredients with multiple CAS Nos

Ingredient Name CAS methyltetrahydrofuran 96-47-9, 25265-68-3

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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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