

α -Hexylcinnamaldehyde

sc-223762



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

α -Hexylcinnamaldehyde

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

C₁₅H₂₀O, C₆H₅CH=C[(CH₂)₅CH₃]CHO, "cinnamaldehyde, alpha-hexyl-", "alpha-hexylcinnamic aldehyde", "hexyl cinnamaldehyde", "2-hexylcinnamaldehyde", "hexyl cinnamic aldehyde", "alpha-cinnamic aldehyde", "alpha-hexylcinnamyl aldehyde", alpha-n-hexyl-beta-phenylacrolein, "octanal, 2-(phenylmethylene)-", 2-(phenylmethylene)octan-1-al, "hexyl cinnamyl"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	0	
Body Contact:	2	
Reactivity:	1	
Chronic:	2	

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



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

Irritating to skin.
May cause SENSITISATION by skin contact.
HARMFUL - May cause lung damage if swallowed.
Very toxic to aquatic organisms.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733).
- The material has NOT been classified as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.

EYE

- There is some evidence to suggest that this material can cause eye irritation and damage in some persons.
 - Precautions for handling reactive unsaturated aldehydes should be the same as for those of highly active eye and pulmonary irritants such as phosgene.
- Sufficient engineering controls, with monitoring where possible, are of importance.

SKIN

- Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions.
- 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.
- 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.

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.
- 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.
- The material has NOT been classified as "harmful by inhalation". This is because of the lack of corroborating animal or human evidence.
- Inhalation hazard is increased at higher temperatures.
- Exposure to aldehydes causes neurological symptoms such as headache, drowsiness, dizziness, seizures, depression and coma. Cardiovascular involvement may result in increased heart rate, collapse and low blood pressure; respiratory effects include throat spasms, irritation, difficulty swallowing, pulmonary edema and an asthma-like condition.

CHRONIC HEALTH EFFECTS

- Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population. Exposure to Aliphatic aldehydes can cause irritation of the skin.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
alpha-hexylcinnamaldehyde	101-86-0	>98
stabilised (typically) with butylated hydroxyanisole	25013-16-5	

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. · 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. · Other measures are usually unnecessary.

NOTES TO PHYSICIAN

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

-----BASIC TREATMENT

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

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not available
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	0.950
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA

- Alcohol stable foam.
- Dry chemical powder.

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 100 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 (CO₂), 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

- Environmental hazard - contain spillage.
- Clean up all spills immediately.
- Avoid breathing vapors and contact with skin and eyes.

MAJOR SPILLS

- Environmental hazard - contain spillage.
- Moderate hazard.
- 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

- Metal can or drum
- Packing as recommended by manufacturer.

STORAGE REQUIREMENTS

- Store in original containers.
- Store at room temperature.
- Keep containers securely sealed.

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 - British Columbia Occupational Exposure Limits	butylated hydroxyanisole (Turpentine and selected monoterpenes Revised 2003)	20							S
Canada - Alberta Occupational Exposure Limits	butylated hydroxyanisole (Turpentine and selected monoterpenes)	20	111						
US TSCA New Chemical Exposure Limits (NCEL)	butylated hydroxyanisole (Halogenated alkanes (P84-106/107))	1.0							
Canada - Ontario Occupational Exposure Limits	butylated hydroxyanisole (Particles (Insoluble or Poorly Soluble) Not Otherwise)		10 (I)						
Canada - British Columbia Occupational Exposure Limits	butylated hydroxyanisole (Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC))		10 (N)						
Canada - Ontario Occupational Exposure Limits	butylated hydroxyanisole (Specified (PNOS) / Particules (insolubles ou peu solubles) non précisées par ailleurs)		3 (R)						
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	butylated hydroxyanisole (Particulates not otherwise regulated Respirable fraction)		5						

US - California Permissible Exposure Limits for Chemical Contaminants	butylated hydroxyanisole (Particulates not otherwise regulated Respirable fraction)	5	(n)
US - Oregon Permissible Exposure Limits (Z-1)	butylated hydroxyanisole (Particulates not otherwise regulated (PNOR) (f) Total Dust)	10	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”
US - Michigan Exposure Limits for Air Contaminants	butylated hydroxyanisole (Particulates not otherwise regulated, Respirable dust)	5	
US - Oregon Permissible Exposure Limits (Z-1)	butylated hydroxyanisole (Particulates not otherwise regulated (PNOR) (f) Respirable Fraction)	5	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	butylated hydroxyanisole (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)	5	
Canada - Prince Edward Island Occupational Exposure Limits	butylated hydroxyanisole (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book

ENDOELTABLE

The following materials had no OELs on our records

- alpha-hexylcinnamaldehyde: CAS:101-86-0

PERSONAL PROTECTION



RESPIRATOR

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

EYE

- Safety glasses with side shields.
- Chemical goggles.

HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.

NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

• When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

• When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

• Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Neoprene gloves.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash 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.

Does not mix with water.

Floats on water.

State	Liquid	Molecular Weight	216.33
Melting Range (°F)	Not available	Viscosity	Not Available
Boiling Range (°F)	345- 349 (15 mm)	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	>230	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)	0.950
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	>1
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

APPEARANCE

Yellow liquid with jasmmin-like odour, particularly in dilution; does not mix well with water. Soluble in most fixed oils and mineral oils.

■ Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). Phenols with log Pow >7.4 are expected to exhibit low toxicity to aquatic organisms.</div>

Material	Value
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Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

STORAGE INCOMPATIBILITY

- Flammable and/or toxic gases are generated by the combination of aldehydes with azo, diazo compounds, dithiocarbamates, nitrides, and strong reducing agents.
 - Many aldehydes are incompatible with strong acids, amines, strong oxidizers, and alkaline materials.
- Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

alpha-hexylcinnamaldehyde

TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.

ALPHA-HEXYLCINNAMALDEHYDE:

TOXICITY	IRRITATION
Oral (rat) LD50: 3100 mg/kg	Skin (rabbit): 500 mg/24h - Moderate
	Skin (rabbit): 100 mg/24h -SEVERE
	Skin (g.pig): 100 mg/24h-SEVERE

- 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.

For cinnamyl aldehyde derivatives:

The chemical category designated "cinnamyl derivatives" includes cinnamaldehyde, two alkyl-substituted cinnamaldehydes, and one alkyl-substituted dihydrocinnamaldehyde derivative. The four substances are grouped together because of their close structural relationships and the resulting similarities of their physio-chemical and toxicological properties. Common structural features among members of this chemical category are that they contain either a 3-phenyl-2-propenal or 3-phenylpropanal backbone. The group includes cinnamaldehyde (3-phenyl-2-propenal), alpha-amylcinnamaldehyde (2-amyl-3-phenyl-2-propenal), alpha-hexylcinnamaldehyde (2-hexyl-3-phenyl-2-propenal) and p-t-butyl-alpha-methylhydrocinnamaldehyde [3-(p-t-butylphenyl)-2-methylpropanal].

In nature, cinnamaldehyde is the predominant constituent of cassia oil and Ceylon cinnamon bark oil. It is responsible for the spicy aroma strongly reminiscent of cinnamon spice. It is common components of traditional foods. Cinnamaldehyde, alphaamylcinnamaldehyde, and alpha-hexylcinnamaldehyde are currently recognized by the U.S. Food and Drug Administration (FDA) as GRAS ("generally regarded as safe") for their intended use as flavoring substances.

Quantitative natural occurrence data for cinnamaldehyde indicates that oral intake occurs predominantly from consumption of cinnamon spice products and cinnamon flavorings

Acute Toxicity: Oral LD50 values have been reported for the four substances in this chemical category. In rats, LD50 values are in the range of 2220-3400 mg/kg, demonstrating that the oral acute toxicity of these substances is extremely low

Cinnamaldehyde, the alpha-amyl and alpha-hexyl derivatives and its saturated analog (p-t-butyl-alpha-methyldihydrocinnamaldehyde) are rapidly absorbed from the gut, metabolised and excreted primarily in the urine and, to a minor extent, in the faeces.

Dermal acute toxicity shows a similar trend for the four substances in this chemical category. Dermal LD50 values range from a low of 590 ul/kg for cinnamaldehyde to more than 2000 mg/kg for alpha-amylcinnamaldehyde, more than 3000 mg/kg for alpha-hexylcinnamaldehyde, and more than 5000 mg/kg for p-t-butyl-alpha-methylhydrocinnamaldehyde

Genotoxicity: Cinnamaldehyde and its alkyl-substituted derivatives lack direct mutagenic or genotoxic activity, as indicated by the negative results obtained in bacterial test systems. Evidence of genotoxic activity was observed in isolated mammalian cells, with the cinnamyl compounds producing chromosome aberrations and/or mutations in the respective test systems regardless of the presence or absence of metabolic activation; however, the reported in vitro activity did not translate into mutagenic, clastogenic, or genotoxic activity in vivo.

Reproductive Toxicity: Reproductive studies on cinnamyl derivatives have concentrated on the parent alcohol, aldehyde, and acid. Rats were administered 5, 25, or 250 mg/kg bw/day cinnamaldehyde by gavage in olive oil on days 7 to 17 of gestation. Foetal abnormalities observed included: poor cranial ossification in all dose groups; increased incidences of dilated pelvis/reduced papilla in the kidney as well as dilated urethras in the low- and mid-dose groups; and an increase in the number of fetuses with two or more abnormal sternbrae in the mid-dose group. These effects are associated with apparent maternal toxicity as evidenced by a dose related decrease in weight gain at the two highest dose levels.

Developmental Toxicity: In an in vivo developmental toxicity assay, 50 time-mated CD-1 female mice received single oral doses of 1200 mg/kg of cinnamaldehyde in corn oil on days 6-13 of gestation. Female body weights were measured on days 6-15 of gestation and 3 days postpartum. Endpoints monitored included litter size, birth weight, neonatal growth, and survival to 3 days postpartum. Based on the measured parameters there was no significant difference between test and control groups

Metabolic disposition: Rodent and humans studies for cinnamaldehyde and alpha-substituted cinnamaldehydes indicate that cinnamyl derivatives are absorbed, metabolised and excreted as polar metabolites within 24 hours.

The aromatic cinnamaldehyde derivatives are readily oxidised to cinnamic acid derivatives. Human NAD+ dependent alcohol dehydrogenase (ADH) catalyzes oxidation of primary alcohols to aldehydes. Isoenzyme mixtures of NAD+ dependent aldehyde dehydrogenase (ALD) catalyse oxidation of aldehydes to carboxylic acids. Aromatic alcohols and aldehydes have been reported to be excellent substrates for ADH and ALD respectively. The urinary metabolites of cinnamyl alcohol and cinnamaldehyde are mainly derived from metabolism of cinnamic acid. The position and size of the substituent do not significantly affect the pathways of metabolic detoxication of cinnamyl derivatives. Cinnamyl derivatives containing alpha-alkyl substituents (e.g. alpha-methylcinnamaldehyde) are extensively metabolised via beta-oxidation followed by cleavage to yield mainly the corresponding hippuric acid derivative.

Ring substituents (e.g. 3-(p-isopropylphenyl)propionaldehyde and p-methylcinnamaldehyde) do not significantly impact metabolism via beta-oxidation.

Based on these observations, it may be concluded that the presence of side-chain alkyl substituents and ring substituents do not alter the principal metabolic detoxication pathway for cinnamyl derivatives.

TOXICITY

IRRITATION

BUTYLATED HYDROXYANISOLE:

Oral (rat) LD50: >2000 mg/kg

Nil
Reported
[VW & R]

Intraperitoneal (rat) LD50: 881 mg/kg

Oral (mouse) LD50: 1100 mg/kg

Oral (rabbit) LD50: 2100 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.

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen

[National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

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.

Altered sleep time, ataxia, respiratory stimulation, haemorrhage, liver changes, enzyme changes, changes in adrenal weight, changes in serum composition, changes in thyroid weight, changes in liver weight, changes in lung weight, haemolysis, weight loss or decreased weight gain, gastrointestinal changes, gastrointestinal tumours, kidney, ureter, bladder tumours, endocrine tumours, lung, thorax or respiratory tumours, effects on newborn recorded.

CARCINOGEN

VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; IARC; NTP 11th ROC
Butylated hydroxyanisole (BHA)	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	2B
BUTYLATED HYDROXYANISOLE (BHA)	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
BUTYLATED HYDROXYANISOLE (BHA)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
ORGANIC BROMINE COMPOUNDS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC

VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; NTP 11th ROC
PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen	

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms.
 This material and its container must be disposed of as hazardous waste.
 Avoid release to the environment.
 Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
alpha-hexylcinnamaldehyde	LOW	No Data Available	LOW	MED
butylated hydroxyanisole	HIGH	No Data Available	LOW	MED

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 _____
 _____ Alcoholic 293 85 0 0 R 0 0 0 0 0 1 D 1 beverages / CAS:101- 86- 0 /

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=Acute mammalian 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

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: 9

Identification Numbers: UN3082 PG: III

Label Codes: 9 Special provisions: 8, 146,

335, IB3,

T4, TP1,

TP29

Packaging: Exceptions: 155 Packaging: Non- bulk: 203

Packaging: Exceptions: 155 Quantity limitations: No limit

Passenger aircraft/rail:

Quantity Limitations: Cargo No limit Vessel stowage: Location: A

aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:

Environmentally hazardous substance, liquid, n.o.s

Air Transport IATA:

UN/ID Number: 3082 Packing Group: III

Special provisions: A97

Cargo Only

Packing Instructions: 964 Maximum Qty/Pack: 450 L

Passenger and Cargo Passenger and Cargo

Packing Instructions: Y964 Maximum Qty/Pack: 450 L

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 964 Maximum Qty/Pack: 30 kg G

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S. *(CONTAINS ALPHA-HEXYLCINNAMALDEHYDE)

Maritime Transport IMDG:

IMDG Class: 9 IMDG Subrisk: None

UN Number: 3082 Packing Group: III

EMS Number: F-A,S-F Special provisions: 274 335

Limited Quantities: 5 L Marine Pollutant: Yes

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(contains alpha-hexylcinnamaldehyde)

Section 15 - REGULATORY INFORMATION

alpha-hexylcinnamaldehyde (CAS: 101-86-0) is found on the following regulatory lists;

"International Council of Chemical Associations (ICCA) - High Production Volume List","International Fragrance Association (IFRA) Standards Restricted","International Fragrance Association (IFRA) Survey: Transparency List","US EPA High Production Volume Program Chemical List","US Food Additive Database","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Regulations for ingredients

butylated hydroxyanisole (CAS: 25013-16-5,8003-24-5) is found on the following regulatory lists;

"Canada - Saskatchewan Occupational Health and Safety Regulations - Designated Chemical Substances","Canada Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","International Council of Chemical Associations (ICCA) - High Production Volume List","International Fragrance Association (IFRA) Survey: Transparency List","OSPAR List of Substances of Possible Concern","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which production, use or other presence must be reported","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens","US - Maine Chemicals of High Concern List","US - Massachusetts Oil & Hazardous Material List","US - Minnesota Hazardous Substance List","US Cosmetic Ingredient Review (CIR) Cosmetic ingredients found safe as used","US EPA High Production Volume Chemicals 1994 List of Additions","US FDA Direct Food Substances Generally Recognized as Safe","US Food Additive Database","US National Toxicology Program (NTP) 11th Report Part B. Reasonably Anticipated to be a Human Carcinogen","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

- May produce discomfort of the eyes and respiratory tract*.

- Repeated exposure potentially causes skin dryness and cracking*.
 - Vapours potentially cause drowsiness and dizziness*.
- * (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances

Substance CAS Suggested codes alpha- hexylcinnamaldehyde 101- 86- 0 Xi; R38 butylated hydroxyanisole 25013- 16- 5 Carc3; R40 Mut3; R68 Xn; R22 Xi; R38 N; R50 butylated hydroxyanisole 8003- 24- 5 Xi; R38

Ingredients with multiple CAS Nos

Ingredient Name CAS butylated hydroxyanisole 25013-16-5, 8003-24-5

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

- Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

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

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