

# 3-(4-Methylbenzylidene)camphor

sc-209466

Material Safety Data Sheet



The Power is Question

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

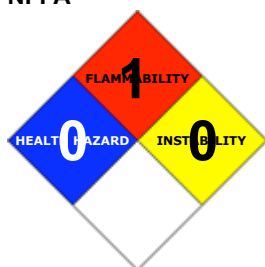
### PRODUCT NAME

3-(4-Methylbenzylidene)camphor

### 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

C18-H22-O, "4-methylbenzylidene camphor", "bicyclo[2.2.1]heptan-2-one, 1, 7, 7-trimethyl-3[(4-methylphenyl)methylene]-", 4-MBC, "Eusolex 6300", "Neo Heliopan", "UV sunscreen"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1	<div><div></div></div>	
Toxicity:	0	<div><div></div></div>	
Body Contact:	0	<div><div></div></div>	
Reactivity:	1	<div><div></div></div>	Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4
Chronic:	2	<div><div></div></div>	

### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

### 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.

<|p>.

##### EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.

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##### SKIN

■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

■ 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

■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

#### CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.

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Speculative discussion surrounds the use of sunscreens and a possible rise in the incidence of melanoma. One mechanism proposed involves the development of free radicals following UVB absorption by the chemical agent; free radicals are potentially damaging to DNA. A further mechanism involves the inhibition of Vitamin D production; low levels of Vitamin D have been associated with an increased risk of the development of breast and colon cancer and may also accelerate the growth of melanoma.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
3-(4-methylbenzylidene)camphor	38102-62-4	>98
contains		
<a href="#">3-(4-methylbenzylidene)-DL-camphor</a>	36861-47-9	

## 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 eyes: · Wash out immediately with water. · If irritation continues, seek medical attention.

##### SKIN

■ If skin or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation.

##### INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Other measures are usually unnecessary.

#### NOTES TO PHYSICIAN

■ Treat symptomatically.

## Section 5 - FIRE FIGHTING MEASURES

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

### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.

### FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible solid which burns but propagates flame with difficulty.
  - Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), other pyrolysis products typical of burning organic material. May emit poisonous fumes.

### FIRE INCOMPATIBILITY

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

### PERSONAL PROTECTION

Glasses:  
Chemical goggles.  
Gloves:  
Respirator:  
Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing dust and contact with skin and eyes.

### MAJOR SPILLS

- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
  - Wear protective clothing when risk of exposure occurs.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers.
  - In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

### RECOMMENDED STORAGE METHODS

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE REQUIREMENTS

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

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Canada - Alberta Occupational Exposure Limits	3-(4-methylbenzylidene)camphor (Turpentine and selected monoterpenes)	20	111	
US - California Permissible Exposure Limits for Chemical Contaminants	3-(4-methylbenzylidene)camphor (Particulates not otherwise regulated Respirable fraction)		5	(n)
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	3-(4-methylbenzylidene)camphor (Particulates not otherwise regulated Respirable fraction)		5	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	3-(4-methylbenzylidene)camphor (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)		5	
US - Michigan Exposure Limits for Air Contaminants	3-(4-methylbenzylidene)camphor (Particulates not otherwise regulated, Respirable dust)		5	
Canada - Prince Edward Island Occupational Exposure Limits	3-(4-methylbenzylidene)camphor (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)		10	See Appendix B current TLV/BEI Book

ENDOELTABLE

## PERSONAL PROTECTION



## RESPIRATOR

Particulate

Consult your EHS staff for recommendations

## EYE

- Safety glasses with side shields
- Chemical goggles.

## HANDS/FEET

■ 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.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene

- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

#### OTHER

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

#### ENGINEERING CONTROLS

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	254.37
Melting Range (°F)	150.8- 156.2	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	>212	pH (1% solution)	Not applicable
Decomposition Temp (°F)	302	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not available

### APPEARANCE

White to beige powder with weak camphor-like odour; does not mix well with water (0.00013 g/100 ml, 20 C).

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

- Avoid reaction with oxidizing agents.

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

## Section 11 - TOXICOLOGICAL INFORMATION

3-(4-METHYLBENZYLIDENE)CAMPHOR

### TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- for 3-(4'-methylbenzylidene)camphor

Acute toxicity was low.

Sub-acute and sub-chronic studies in rats suggest marked interference of 4-MBC in thyroid hormone metabolism as evidenced by changes in thyroid weight, levels of circulating thyroid hormones and histological evidence of thyroid stimulation. In addition, interference with thyroid function may have affected other parameters (e.g. red blood cell turnover).

Hypertrophy and hyperplasia of thyroid epithelium was observed at levels of 50 mg/kg bw/day and above. At the lowest level tested (25 mg/kg bw/day), no morphological thyroid effect was noted, but increases in serum T4 were still observed. In addition, effects on red blood cell parameters were still observed at the lowest level tested. Hence a clear no-effect level was not obtained and 25 mg/kg bw is a LOAEL rather than a NOAEL. No data were available on the long term consequences of prolonged thyroid stimulation.

Studies in dogs indicated that thyroid function is probably affected at higher levels of 4-MBC in dogs than in rats. The study duration was, however, limited (exposure to one dose lasted maximally 9 days, whereas rats were exposed for 13 weeks). In addition, the very limited number of dogs and the special dosing regimen (increasing dose, versus separate dose groups and a control group) did not allow a systematical investigation of other parameters that determined the NOAEL in rats (e.g. haematological effects). A NOAEL in dogs could therefore not be established on the basis of these studies.

A study of the effect of dermal applied active ingredient on thyroid function in man did not reveal compound-related changes in thyroid hormone levels. However, the exposure surface was only 1200 cm<sup>2</sup> and this study may not mimic the 'in use conditions'

A teratogenicity study revealed a NOAEL of 10 mg/kg bw/day with developmental effects at 30 and 100 mg/kg bw/day. In a reproduction study in rats, the oral administration of levels up to 50 mg 4-MBC/kg bw/day did not affect reproductive function of female rats or the development of the offspring.

Tests for skin irritation, sensitisation, photo-toxicity, photo-sensitisation and photo-contact allergy were negative. The animal tests for sensitisation, however, were unsatisfactory, in as much as Freund's complete adjuvant had not been used. It was noted, however, that the compound very rarely caused contact allergy in man.

The percutaneous absorption was probably between 1.3 - 4.75 ug a.i./cm<sup>2</sup> as judged from urinary and faecal excretion in man following cutaneous application of an o/w formulation containing 5% radioactive a.i. (250 ug a.i./cm<sup>2</sup>) over a 6 hr period. The results of the percutaneous absorption studies are, however, difficult to interpret. Moreover, although the test substance is insoluble in water, no data were obtained with a w/o emulsion.

An Ames test and a chromosomal aberration test in vitro were negative. Tests for photomutagenicity were carried out using 2 strains of *S. typhimurium* and *E. coli* WP2. The results were negative. Tests for photo-clastogenicity were negative.

Methylbenzylidene camphor in sunscreen products poses a reason for concern.

The changes in thyroid hormone profile and thyroid morphological analysis in rats are difficult to interpret with the data available. Increased TSH in combination with elevated T3 or T4, enlarged thyroids and thyroid proliferation suggests a major interference of 4-MBC in thyroid hormone metabolism. Despite some limits with respect to the extrapolation of rodent experimental results to human pathophysiology, the present findings in rats cannot be disregarded without a proper understanding of the mechanisms involved. As goitrogenesis is not a trivial process but is in general associated with increased possibility for thyroid autonomy or thyroid carcinoma, disturbances of the thyroid hormone axis should be considered with great caution

SCCP Opinion Colipan S60 October 2004/2006.

3-(4-METHYLBENZYLIDENE)CAMPBOR:

TOXICITY	IRRITATION
Oral (Rat) LD50: >10000 mg/kg *	
Oral (Mouse) LD50: >10000 mg/kg *	
Oral (Dog) LD50: >5000 mg/kg *	
Dermal (Rat) LD50: >10000 mg/kg *	
Intraperitoneal (Rat) LD50: >5000 mg/kg *	

TOXICITY	IRRITATION
<b>3-(4-METHYLBENZYLIDENE)-DL-CAMPBOR:</b>	
Oral (rat) LD50: 2000 mg/kg	Nil Reported [Givaudan-Roure]

## Section 12 - ECOLOGICAL INFORMATION

No data

### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
3-(4-methylbenzylidene)camphor	HIGH		LOW	LOW
3-(4-methylbenzylidene)-DL-camphor	HIGH		LOW	LOW

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! 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. 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

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**3-(4-methylbenzylidene)camphor (CAS: 38102-62-4, 36861-47-9) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "OSPAR List of Substances of Possible Concern", "US - Maine Chemicals of High Concern List", "US Toxic Substances Control Act (TSCA) - Inventory"

### Regulations for ingredients

**3-(4-methylbenzylidene)-DL-camphor (CAS: 36861-47-9) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "OSPAR List of Substances of Possible Concern", "US - Maine Chemicals of High Concern List", "US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

■ Cumulative effects may result following exposure\*.

■ Limited evidence of a carcinogenic effect\*.

\* (limited evidence).

### ND

Substance CAS Suggested codes 3- (4- methylbenzylidene)camphor 38102- 62- 4 3- (4- methylbenzylidene)camphor 36861- 47- 9 3- (4- methylbenzylidene)- DL- camphor 36861- 47- 9

### Ingredients with multiple CAS Nos

Ingredient Name CAS 3-(4-methylbenzylidene)camphor 38102-62-4, 36861-47-9

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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](http://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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Issue Date: Jul-19-2008

Print Date: Nov-19-2010