

# MATERIAL SAFETY DATA SHEET OF ESSENTIAL OILS FROM NEPAL



## Government of Nepal

Ministry of Forests and Soil Conservation  
Department of Plant Resources  
Natural Products Research Laboratory  
Thapathali, Kathmandu, Nepal  
2015

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Thapathali, Kathmandu, Nepal  
2015

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## Forewords

Nepal possesses rich heritage of Medicinal and Aromatic Plants (MAPs). Essential oils obtained from various aromatic plants are one of the exportable products of Nepal. Herbs and NTFPs Development Policy-2004 has emphasized on the promotion of value added products such as essential oils and herbs extracts rather than crude herbs. On the other hand, quality assurance and some technical data of such products are also required by EU, US and other markets. National Trade Integration Strategy (NTIS)- 2010 has provided us an opportunity to strengthen our laboratory, impart training to laboratory technicians and purchase some relevant equipment that has helped us to formulate some data and prepare technical document that can enhance export of value added products such as essential oils.

Material Safety Data Sheet (MSDS) developed for essential oils of Nepal will certainly help to enhance the export potential of these products and ease the business community to export such products to lucrative markets. This endeavor will ultimately uplift the livelihood of Nepalese village people engaged in the cultivation and collection of MAPs. There has been contribution from all stakeholders to bring out this work on essential oils of Nepal. We are also hopeful that this document will prove valuable to researchers and students involved in essential oils sector as a reference. We are optimistic that this document will be milestone in exporting essential oil from Nepal.

.....  
Mrs. Sushma Upadhyay  
Acting Director General  
Department of Plant Resources  
Thapathali, Kathmandu  
July, 2015

# Acknowledgment

Medicinal and Aromatic Plants (MAPs) are niche products of Nepal, prioritized by Government of Nepal as one of the exporting commodity. National Trade Integration Strategy (NTIS)-2010 has selected herbs and essential oils as one of the competitive advantage group of commodity, export of which can enhance livelihood as well as increase growth in export scenario. Value added products like essential oils and herbs extracts need some technical documents regarding their technical information and identity. Material Safety Data Sheet (MSDS) is among one which will ease the export of Nepalese essential oils in EU, US and other markets.

Natural Products Research Laboratory, Department of Plant Resources took initiative to prepare the Safety Data Sheet to support Nepalese entrepreneurs and exporters in enhancing the export of essential oil.

Mrs. Sushma Upadhyay, Acting Director General, Department of Plant Resources is greatly acknowledged for her tremendous support and guidance in the entire work. Sincere thanks goes to Mr. Sanjeev Kumar Rai, Deputy Director General for his valuable inputs.

Mr. Khilendra Gurung; Himalayan Bio Trade Pvt. Ltd, Mr. Govinda Ghimire; President of Nepal Herbs and Herbal Products Association (NEHHPA), Dr. Krishna Ram Amatya; Shambhala Herbs and Aromatic Industry, Mr. Ramesh Sthapit and all stakeholders are highly appreciated for initiating, materializing and making this task fruitful. We would also like to thank entire team of Natural Products Research Laboratory for their dedication and support in laboratory work and data compilation. We sincerely believe that this document will be helpful in exporting essential oil from Nepal.

Natural Products Research Laboratory  
Thapathali, Kathmandu  
July, 2015

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## Abbreviations and acronyms

AICS: Australian Inventory of Chemical Substances

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS No.: Chemical Abstracts Service Registry Numbers

CLP: Classification, Labeling and Packaging of Substances and Mixtures

DPR: Department of Plant Resources

EEC: European Economic Community

ECHA: European Chemical Agency

EINECS: European Inventory of Existing Commercial Chemical Substances

EU: European Union

FEMA: Flavour and Extracts Manufacturers Association

GHS: Global Harmonized System

HDPE: High-Density Polyethylene

HMIS: Hazardous Materials Identification System

HSNO: Hazardous Substances and New Organisms

IATA: International Air Transport Association

IMDG: International Maritime Dangerous Goods

INCI: International Nomenclature of Cosmetics Ingredients

LC<sub>50</sub>: Lethal Concentration for 50% Mortality

LD<sub>50</sub>: Lethal Dose for 50% Mortality

MAPs: Medicinal and Aromatic Plants

MSDS: Material Safety Data Sheet

NAFTA: North American Free Trade Agreement

NEHHPA: Nepal Herbs and Herbal Products Association

NPRL: Natural Products Research Laboratory

NTFPs: Non Timber Forest Products

NTIS: National Trade Integration Strategy

OSHA: Occupational Safety and Health Administration

REACH: Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail

SDS: Safety Data Sheet

SUSMP: Standards for the Uniform Scheduling of Medicines and Poisons

TSCA: Toxic Substances Control Act

UN: United Nations

US: United States

WHMIS: Workplace Hazardous Materials Information System

# Chapter One

## 1.1 Introduction:

Essential oils are one of the high value and low volume commodity exported from Nepal. Out of the total production of essential oils in Nepal only few quantities are consumed in domestic market while major portions are exported mainly to India, EU and US based markets.

For the export to EU, US and other international markets, Material Safety Data Sheet (MSDS) for essential oils are mandatory requirements. As accordance to the European Commission (EC) Legislation Directive 91/155/EEC and 2001/58/EC or OSHA: CFR 1910: 1200 (US), MSDS is essential for the entry to EU and US with delivered products.

MSDS is an important component of product stewardship and occupational safety and health. It is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner. It includes information such as physical data, toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment and spill-handling procedures.

Obligatory 16-points information system templates for MSDS sheets are needed. But, MSDS formats may vary from source to source within a country depending on national requirements.

The technical level of information on essential oils presented by many exporters in MSDS sheet is often extremely poor. But customers have the right to demand from their suppliers, a level of information which they can both understand and which is suitable for purpose. In addition, only basic tests for some items of essential oils have been done in Nepal and limited literature based information are available to fulfill the requirements for MSDS.

Owing to these circumstances, essential oils exporters in Nepal often have to depend on buyers for conducting such obligatory tests and depend on the secondary sources for the preparation of MSDS of the respective products.

Therefore, Natural Products Research Laboratory (NPRL) at Department of Plant Resources (DPR) in consultation with essential oils exporters took the initiative to develop MSDS template which the exporters can use with their information during delivery of products to their destinations.

## **1.2 International requirements:**

### **1.2.1 Canada**

In Canada, Workplace Hazardous Materials Information System (WHMIS) establishes the requirements for MSDS in workplaces and is administered federally by Health Canada under the Hazardous Products Act, Part II, and the Controlled Products Regulations. WHMIS and MSDS requirements are also enforced by provincial Ministries or Departments of Labor.

### **1.2.2 European Union**

Safety Data Sheets (SDS) has been made an integral part of the system of Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). The original requirements of REACH for SDS have been further adapted to take into account the rules for SDS of the Global Harmonized System (GHS) and the implementation of other elements of the GHS into EU legislation that were introduced by Regulation (EC) No 1272/2008 (CLP) via an update to Annex II of REACH.

The SDS follows a 16 section format which is internationally agreed and for substances especially, the SDS should be followed with an Annex which contains the exposure scenarios of this particular substance. The SDS must be supplied in an official language of the Member State(s) where the substance or mixture is placed on the market, unless the Member State(s) concerned provide(s) otherwise (Article 31(5) of REACH).

The European Chemicals Agency (ECHA) has published a guidance document on the compilation of SDS.

### **1.2.3 United Nations**

The United Nations (UN) defines certain details used in SDS such as the UN numbers used to identify some hazardous materials in a standard form while in international transit.

### **1.2.4 United States**

In the United States, the Occupational Safety and Health Administration (OSHA) requires that MSDS be available to employees for potentially harmful substances handled in the workplace under the Hazard Communication Regulation. The MSDS is also required to be made available to local fire departments and local and state emergency planning officials under Section 311 of the Emergency Planning and Community Right-to-Know Act. The American Chemical Society defines Chemical Abstracts Service Registry Numbers (CAS numbers) which provide a unique number for each chemical and are also used internationally in MSDS.

# CHAPTER TWO

## Material Safety Data Sheet (MSDS) of Abies Oil

### Section 1: Product and Responsible Organization Identification

**Product Name:** Abies essential oil  
**Common Name:** Himalayan silver fir  
**Botanical Name:** *Abies spectabilis* (D.Don) Mirb.  
**Synonym:** *Abies webbiana*  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Not available  
**EUINCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

### Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** Not identified.



### Section 3: Composition and Information on Ingredients

**CAS No.:** 90028-76-5  
**EINECS No.:** 289-870-2  
**FEMA:** Not available  
**NAFTA:** Not available  
**REACH Registration No.:** Not available  
**% by Weight:** 100  
**Contents:**  $\alpha$  and  $\beta$  - pinene, camphene, limonene, bornyl acetate, epi- $\alpha$ -eudesmol, carene  
**Country of Origin:** Nepal

### Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not Available.

**Special Remarks on Fire Hazards:** Not identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water Spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the air borne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Use approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Colourless to pale yellow

**pH:** Not available

**Odour:** Pleasant, sweet, balsamic

**Specific Gravity:** 0.8834 at 18.4°C

**Refractive Index:** 1.476 at 20.2°C

**Optical Rotation:** -21.363 at 24.9°C

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid Value:** 0.9015

**Ester Value:** 39.47

**Ester Value after Acetylation:** 51.219

**Flash Point:** 44°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, Radioactive substances and foodstuffs.

**UN Number:** 1272

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.31

**Rail:** Not allocated.

**Sea:** IMDG 3.3

**Air:** IATA 3.3

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

#### **Disclaimer:**

The information in this safety data sheet is correct to the best of our knowledge. We do not accept liability for loss, injury or damage that may result from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

Please ensure that this safety data sheet is passed to the appropriate person(s) in your company, who is capable of acting on the information.

**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Anthopogon Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Anthopogon essential oil  
**Common Name:** Rhododendron leaf essential oil  
**Botanical Name:** *Rhododendron anthopogon* D. Don  
**Synonym:** Not applicable  
**Other Name:** Sunpati oil  
**Australian AICS Name:** Not allocated  
**USA INCI Name:** Rhododendron Anthopogon flower/leaf extract  
**EUINCI Name:** Rhododendron Anthopogon flower/leaf extract

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Not a SUSMP Scheduled Poison**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.

**Xn:** Harmful

**Xi:** Irritant

**Others:** Not identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 8006-90-4

**EINECS No.:** Not available

**FEMA:** 2848

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:**  $\alpha$ -pinene,  $\beta$ -pinene, limonene, cadinene, ocimene, terpinene, myrcene, cymene, caryophyllene, germacrene D

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** Not identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminium containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges, Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow

**pH:** Not available

**Odour:** Characteristic; sweet-herbal, faintly balsamic

**Specific Gravity:** 0.8960 at 18.4°C

**Refractive Index:** 1.487 at 20.3°C

**Optical Rotation:** -5.9 at 25.5°C

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid value:** 2.659

**Ester Value:** 11.32

**Ester Value after Acetylation:** 37.592

**Flash Point:** 66°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

This material presents no significant reactivity hazard.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

## Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 2319.

**Proper Shipping Name:** Terpene hydrocarbon, n.o.s.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

## Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Risk Phrases:**

**R10:** Flammable.

**R22:** Harmful if swallowed.

**R36/37/38:** Irritating to eyes, respiratory system, skin

**R44:** Risk of explosion if heated under confinement.

**Safety Phrases:**

**S15/16:** Keep away from heat, source of ignition – no smoking

**S20/23:** When using do not eat, drink, inhale

**S24/25:** Avoid contact with skin, eyes

**S51:** Use only in well-ventilated areas.

**S60:** This material and its container must be disposed of as hazardous waste.

**S62/64:** If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label; rinse mouth water (only if the person is conscious).

**S63:** In case of accident by inhalation: remove casualty to fresh air immediately and keep at rest.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

## Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

***Disclaimer:***

The information in this safety data sheet is correct to the best of our knowledge. We do not accept liability for loss, injury or damage that may result from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

Please ensure that this safety data sheet is passed to the appropriate person(s) in your company, who is capable of acting on the information.

**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Artemisia Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Artemisia essential oil  
**Common Name:** Mugwort, Common wormwood  
**Botanical Name:** *Artemisia vulgaris* L.  
**Synonym:** Not available  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Not available  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** Not identified



## Section 3: Composition and Information on Ingredients

**CAS No.:** 84775-75-7  
**EINECS No.:** Not available  
**FEMA:** Not available  
**NAFTA:** Not available  
**REACH Registration No.:** Not available  
**% by Weight:** 100  
**Contents:**  $\alpha$ -thujone, 1,8-cineole, sabinene, davanone, fenchene  
**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** Not identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges, Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow

**pH:** Not available

**Odour:** Characteristic

**Specific Gravity:** 0.9311 at 25°C

**Refractive Index:** 1.484 at 25°C

**Optical Rotation:** -7.25

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid Value:** 9.7

**Ester Value:** 31.3

**Ester Value after Acetylation:** 108.3

**Flash Point:** 57°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1993.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

#### **Disclaimer:**

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**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Calamus Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Calamus essential oil  
**Common Name:** Calamus, Sweet flag  
**Botanical Name:** *Acorus calamus* L.  
**Synonym:** Not available  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Not available  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.

**Others:** None identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 8015-79-0

**EINECS No.:** 283-869-0

**FEMA:** 8016-63-5

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:**  $\beta$ -asarone,  $\alpha$ -asarone, farnesol, elemicin, methyl-iso-eugenol, nerolidol

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** Not identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Clear pale straw

**pH:** Not available

**Odour:** Floral herbaceous, spicy, earthy, rooty

**Specific Gravity:** 1.0862 at 25°C

**Refractive Index:** 1.556 at 25°C

**Optical Rotation:** Not available

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid Value:** 1.2

**Ester Value:** 2.2

**Ester Value after Acetylation:** 50.9

**Flash Point:** 74°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1993.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

#### **Disclaimer:**

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Please ensure that this safety data sheet is passed to the appropriate person(s) in your company, who is capable of acting on the information.

**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Cinnamon Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Cinnamon essential oil  
**Common Name:** Cinnamon leaf, Bay leaf  
**Botanical Name:** *Cinnamomum tamala* (Buch-Ham.) Nees & Eberm.  
**Synonym:** *Cinnamomum cassia* D. Don  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Not available  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** Not identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 84-649-98-9  
**EINECS No.:** 283-479-0  
**FEMA:** Not available  
**NAFTA:** Not available  
**REACH Registration No.:** Not available  
**% by Weight:** 100  
**Contents:** Eugenol, eugenol acetate, cinnamaldehyde, benzyl benzoate, linalol  
**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow

**pH:** Not available

**Odour:** Characteristic

**Specific Gravity:** 0.8921 at 25°C

**Refractive Index:** 1.470 at 25°C

**Optical Rotation:** 2.99 at 26.3°C

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid Value:** 3.7

**Ester Value:** 13.3

**Ester Value after Acetylation:** 113.9

**Flash Point:** 54°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1993.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

#### **Disclaimer:**

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**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Eucalyptus Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Eucalyptus essential oil  
**Common Name:** Eucalyptus  
**Botanical Name:** *Eucalyptus globulus* Labill.  
**Synonym:** Not available  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Eucalyptus cineole oil  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** None identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 97675-74-6 / 8000-48-4

**EINECS No.:** Not available

**FEMA:** 2466

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:** 1,8-cineole,  $\alpha$ -pinene,  $\beta$ -pinene, limonene, terpinolene

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow to amber orange

**pH:** Not available

**Odour:** Camphor-like odor

**Specific Gravity:** 0.90705 at 25°C

**Refractive Index:** 1.464 at 26.1°C

**Optical Rotation:** -2.06@25.5°C

**Boiling Point:** 175°C

**Melting Point:** Not available

**Acid Value:** 3.579

**Ester Value:** 3.0461

**Ester Value after Acetylation:** 32.5008

**Flash Point:** 47°C

**Flammability:** Combustible liquid

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1169.

**Proper Shipping Name:** Extracts, aromatic, liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** R10 Flammable.

Xn R22 Harmful if swallowed.

Xi R38 irritating to skin

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

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**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Patchouli Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Patchouli essential oil  
**Common Name:** Patchouli  
**Botanical Name:** *Pogostemon cablin* (Blanco) Benth.  
**Synonym:** *Pogostemon patchouli*  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Pogostemon cablin leaf oil  
**EUINCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** Not identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 8014-09-3

**EINECS No.:** 84238-39-1

**FEMA:** 2838

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:** Patchouli alcohol,  $\alpha$ -guaiene, seychellene,  $\beta$ -caryophyllene,  $\beta$ -patchoulene,  $\alpha$ -patchoulene, selinene

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Vapour respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Dark red brown

**pH:** Not available

**Odour:** Characteristic, earthy, woody aroma with a nearly hidden fruity note

**Specific Gravity:** 0.9465 @ 25°C

**Refractive Index:** 1.505 @ 25.9°C

**Optical Rotation:** -20.97 @ 20°C

**Boiling Point:** Not available

**Melting Point:** Not available

**Ester Value:** 1.7749

**Ester Value after Acetylation:** 14.4171

**Acid value:** 0.5929

**Flash Point:** 114 °C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** >1

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not available.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not available.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not available.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not available.

**Long Term Toxicity:** Not available.

**Exposure Limits:** Not established.

**Human Exposure Tests:** Not available.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, Oxidising Agents, Organic Peroxides, Radioactive Substances and Foodstuffs.

**UN Number:** 1169.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

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**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Sugandhakokila Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Sugandhakokila essential oil  
**Common Name:** Sugandhakokila oil  
**Botanical Name:** *Cinnamomum glaucescens* Nees.  
**Synonym:** *Cinnamomum cecidodaphne* Meisn.  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Cinnamomum glaucescens fruit oil  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.  
**Others:** Not identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 8007-48-5

**EINECS No.:** Not available

**FEMA:** Not available

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:** 1,8-cineole, pinene, sabinene,  $\alpha$ -phellandrene, cymene, camphor, terpinen-4-ol, terpineol, caryophyllene

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles. Lab coat. Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles, Full suit, Vapour respirator, Boots, Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow

**pH:** Not available

**Odour:** Characteristic, spicy camphor like

**Specific Gravity:** 0.9391 at 25°C

**Refractive Index:** 1.493 at 25°C

**Optical Rotation:** -8.350 at 25.9°C

**Boiling Point:** 175.5

**Melting Point:** Not available

**Acid Value:** 2.4

**Ester Value:** 62.2

**Ester Value after Acetylation:** 131.7

**Flash Point:** 50°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Not established, avoid pollution to soil and water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1993.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

#### **Disclaimer:**

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**Shipper:**

**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Valerian Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Valerian essential oil  
**Common Name:** Valerian root oil  
**Botanical Name:** *Valeriana jatamansii* Jones  
**Synonym:** *Valeriana wallichii* DC  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Valeriana faurieri root oil  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Not a SUSMP Scheduled Poison**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.

**Xn:** Harmful

**Xi:** Irritant

**Others:** None identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 8008-88-6, 90131-89-8

**EINECS No.:** 290-405-0

**FEMA:** 3100

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:** ar-curcumene,  $\alpha$ - $\beta$ - $\gamma$ -patchoulene, calarene, bergamotene, malial,  $\alpha$ -fenchene,  $\beta$ -sitosterol, valeranone, iso-valeric acid, seychellene

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hotwater and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles, Lab coat, Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles, Full suit, Vapour respirator, Boots, Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Brown to reddish brown

**pH:** Not available

**Odour:** Characteristic; sweet woody herbaceous odor

**Specific Gravity:** 0.9441 at 20°C

**Refractive Index:** 1.427 at 25.9°C

**Optical Rotation:** Not available

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid value:** 319.43

**Ester Value:** 5.9228

**Ester Value after Acetylation:** Not available

**Flash Point:** 66°C

**Flammability:** Combustible liquid

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in alcohol and oils

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable.

This material presents no significant reactivity hazard.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Conditions to Avoid:** Avoid sparks, flame and excessive heat.

**Materials to Avoid:** Strong oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Low order toxicity causing irritation of the stomach and intestines which results in nausea and vomiting.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Repeated or prolonged contact can cause redness, irritation and scaling of skin (dermatitis). Adverse skin effects should be prevented by normal care and personal hygiene.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Inhalation of high concentrations of vapour may result in irritation of eyes, nose, throat, headache, nausea, and dizziness.

**Chronic Effects:** May cause allergic reaction on skin

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Very toxic to aquatic organism may cause long-term adverse effects in the aquatic environment. avoid pollution to ground, surface or underground water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

## Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1169.

**Proper Shipping Name:** Liquid, aromatic, extract.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

## Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Risk Phrases:**

**R10:** Flammable.

**R22:** Harmful if swallowed.

**R36/37/38:** Irritating to eyes, respiratory system, skin

**Safety Phrases:**

**S20/23:** When using do not eat, drink, inhale

**S24/25:** Avoid contact with skin, eye

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

## Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HSIS, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

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**Signature:** \_\_\_\_\_

# Material Safety Data Sheet (MSDS) of Yellow zedoary Oil

## Section 1: Product and Responsible Organization Identification

**Product Name:** Yellow zedoary essential oil  
**Common Name:** Yellow zedoary, Wild turmeric  
**Botanical Name:** *Curcuma aromatica* Salisb.  
**Synonym:** Not available  
**Other Name:** Not available  
**Australian AICS Name:** Not available  
**USA INCI Name:** Not available  
**EU INCI Name:** Not available

**Contact Information:**  
**Manufacturer/Supplier:**  
**Street address/PO Box:**  
**Place/Country:**  
**Tel:**  
**Emergency Tel:**  
**E-mail:**

## Section 2: Hazards Identification

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS classification]**

**Flammable:** Combustible liquid, produces oxides of carbon when burning.

**Others:** None identified.



## Section 3: Composition and Information on Ingredients

**CAS No.:** 94349-73-2

**EINECS No.:** 305-191-7

**FEMA:** Not available

**NAFTA:** Not available

**REACH Registration No.:** Not available

**% by Weight:** 100

**Contents:** Camphor, curzerenone,  $\alpha$ -turmerone,  $\alpha$ -turmerone, 1,8-cineole,  $\beta$ -curcumene  $\alpha$ -curcumene

**Country of Origin:** Nepal

## Section 4: First Aid Measures

- 1. Eye Contact:** Do not try to remove any contact lenses unless trained and immediately flush affected eye with plenty of water for at least 15 minutes ensuring irrigation under eyelids and get medical attention.
- 2. Skin Contact:** Remove contaminated clothing and shoes. Wash clothes and shoes before reuse. Immediately flush skin with plenty of water and soap for 15 minutes and get medical attention.
- 3. Inhalation:** Try to get fresh air as quickly as possible, if not breathing give artificial respiration, if breathing is difficult provide oxygen and get medical attention.
- 4. Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. Drink water slowly as much as casualty can comfortably drink in conscious state to dilute. Never give anything by mouth to an unconscious person. Never give anything to a person showing signs of reduced awareness or is being slowly unconscious. Contact physician or local poison centre immediately. If vomiting occurs, lean patient forward to maintain open airway and prevent aspiration.
- 5. Advice to Doctor:** Treat symptomatically; note the nature of this product.

## Section 5: Fire Fighting Measures

**Products of Combustion:** Oxides of carbon.

**Fire Hazards in Presence of Various Substances:** Not available.

**Special Remarks on Fire Hazards:** None identified.

**Protective Equipment:** Self-contained breathing apparatus and protective clothing should be worn when fighting fires involving essential oils or chemicals.

**Extinguishing Media:** Carbon dioxide, dry chemical or foam. Closed containers may build up pressure at elevated temperature.

**Special Procedures:** Determine the need to evacuate or isolate the area according to your local emergency plan.

**Unsuitable Extinguishing Products:** Water spray; Others not established.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:** Keep away this combustible material from heat and source of ignition. Stop the leak if it can be done without risk. Finish cleaning by spreading water on the contaminated surface and allow evacuating through the sanitary system.

**Personal Protection:** Use of self-contained breathing apparatus is recommended for any major chemical spill. Refer also to section 8.

**Safety Precautions:** Eliminate all ignition sources. Ventilate the area. Determine the need to evacuate or isolate the area according to your local emergency plan.

**Environmental Protection:** Keep away from drains, surface and ground water. Report spills to appropriate authorities if required.

**Methods of Cleaning/Disposal:** Contain spill and recover free product. Absorb remainder on vermiculite or other suitable absorbent material. Wipe small spills with cloth. Clean with hot water and detergent. Refer also to Section 13 for disposal procedures.

## Section 7: Handling and Storage

**Handling and Precautions:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapour/spray. Wear suitable protective clothing and maintain good personal hygiene practices. Wash hand after any contact with the container. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:** Keep in a cool, well-ventilated area protected from light and extreme heat. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition. Store in stainless steel drums or aluminum containers or HDPE containers. For short term storage only steel drums lined with epoxy phenolic can be used.

**Specific Procedures:** Protect against electrostatic charges; Others not established.

## Section 8: Exposure Controls/Personal Protection

**Exposure Limits:** There is a blanket recommendation of 10 mg/m<sup>3</sup> for inspirable dusts or mists when limits have not otherwise been established.

**Engineering Controls:** Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value. Ensure that eye wash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Splash goggles, Lab coat, Vapour respirator. Be sure to use an approved/certified respirator or equivalent. Use gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles, Full suit, Vapour respirator, Boots, Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product in case of large spill.

**Respiratory Protection:** Not generally required. Used approved/certified respirator in confined areas or if ventilation is inadequate.

**Hand Protection:** Use of chemical resistant gloves is recommended.

**Eye Protection:** Use of goggles or face shield is recommended.

**Protective Clothing and Equipment:** Use of chemical resistance clothing is recommended along with eye wash fountain and safety shower in the working area.

**Note:** These precautions are for room temperature handling. Use at elevated temperature or aerosol / spray applications may require additional precautions.

## Section 9: Physical and Chemical Properties

**Physical State and Appearance:** Liquid

**Colour:** Pale yellow to orange yellow liquid

**pH:** Not available

**Odour:** Characteristic, warm, spicy turmeric odor

**Specific Gravity:** 0.97025 at 25°C

**Refractive Index:** 1.50 at 26.1°C

**Optical Rotation:** 3.0660 at 25.3°C

**Boiling Point:** Not available

**Melting Point:** Not available

**Acid Value:** 1.8127

**Ester Value:** 5.8292

**Ester Value after Acetylation:** 57.086

**Flash Point:** 62°C

**Flammability:** Not available

**Vapour Pressure:** Not available

**Vapour Density:** Not available

**Ionicity (in Water):** Not available

**Solubility:** Soluble in ethyl alcohol

**Solubility in Water:** Insoluble.

## Section 10: Stability and Reactivity

**Stability:** Chemically stable, hazardous material.

**Conditions of Instability:** Not established.

**Polymerization:** Will not occur.

**Flammability:** Combustible liquid.

**Special Remarks on Corrosivity:** Not available.

**Special Remarks on Reactivity:** Not available.

**Hazardous Combustion or Decomposition Products:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

**Materials to Avoid:** Strong acids, strong alkalis and oxidizing agents.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact, inhalation, ingestion and skin contact.

**Acute Oral Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Dermal Toxicity (LD<sub>50</sub>):** Not identified.

**Acute Inhalation Toxicity (LC<sub>50</sub>):** Not identified.

**Chronic Effects:** Not identified.

**Short Term Toxicity:** Not identified.

**Long Term Toxicity:** Not identified.

**Exposure Limits:** Not identified.

**Human Exposure Tests:** Not identified.

**Mutagenic Effects:** Not identified.

**Reproductive Effects:** Not identified.

**Sensitisation:** Not identified.



## Section 12: Ecological Information

**Eco-toxicity:** Very toxic to aquatic organism may cause long-term adverse effects in the aquatic environment. avoid pollution to ground, surface or underground water bodies.

**Mobility:** Low mobility in soil.

**Bio-accumulative Potential:** Not established.

**Special Remarks on the Products of Biodegradation:** Low persistent level and readily biodegradable.

**Bio-accumulative Potential:** Not established.

**Other Adverse Effects:** Not established.

## Section 13: Disposal Considerations

**Waste Disposal:** Place material or absorbent into sealed containers and dispose of in accordance with current applicable laws and regulations. Do not use empty containers.

**Contaminated Packaging:** Dispose of in accordance with current applicable laws and regulations. Refer to local authority advice.

**Empty Container Disposal:** Empty containers can have residues, gases and mists. Use the proper waste disposal methods and procedures for empty containers as well.

### Section 14: Transport Information

**Transportation:** No special transport required. Not to be transported with explosives, flammable gases (when individual container exceed 500 litres), toxic gases, spontaneously combustible substances, oxidising agents, organic peroxides, radioactive substances and foodstuffs.

**UN Number:** 1993.

**Proper Shipping Name:** Flammable liquid.

**Environmental Hazards:** This is an environmentally hazardous substance.

**Packing Group:** III.

**Road:** Class 3.

**Rail:** Not allocated.

**Sea:** IMDG 3.

**Air:** IATA 3.

### Section 15: Regulatory Information

**Federal and State Regulations:** Not available

**Other Regulations:** Not available.

**Hazards:** Flammable.

**Symbols:** Xn, Xi and F.

**Protective Equipment:** Gloves, Lab Coat, Vapour respirator (Use approved/certified respirator or equivalent). Wear appropriate respirator when ventilation is inadequate and use Splash goggles.

### Section 16: Other Information

**Sources:** The International Cosmetic Ingredient Dictionary and Handbook; IATA Dangerous Goods Regulations, HSIS, HMIS Standard.

**Other Special Considerations:** Not available.

**Created:** .....

**Last Updated:** .....

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**Shipper:**

**Signature:** \_\_\_\_\_

# References

1. Annual Report (2037-2042), Department of Forestry and Plant Research
2. Annual Report (2043-2047), Department of Forestry and Plant Research
3. Annual Report (2058-2067), Department of Plant Resources
4. Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (O.J. L133 31.05.2010, p1-43)
5. Gurung, K. 2009, *Essential Oils in Nepal: A Practical Guide to Essential Oils and Aromatherapy*, Himalayan Bio Trade Pvt. Ltd, Kathmandu, Nepal
6. [http://guidance.echa.europa.eu/exposure\\_scenarios\\_en.htm](http://guidance.echa.europa.eu/exposure_scenarios_en.htm)
7. [http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev03/03files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html)
8. Natural Products Research Laboratory Department of Plant Resources 2014, Material Safety Data Sheet of Essential Oils from Nepal. Department of Plant Resources, Kathmandu, Nepal
9. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006, corrected version in OJ L136, 29.5.2007, p.3).
10. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p.1)
10. United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) [http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev04/04files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev04/04files_e.html)



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