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MATERIAL SAFETY DATA SHEET

TERPINOLENE

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: TERPINOLENE

Product Use Description: Fragrance Ingredient

Company: M/s. Himalaya Terpenes Pvt. Ltd.
Unit no. 201, Bldg. No. 5,
Jogani Indl. Complex, V. N. Purav Marg,
Sion – Chunabhatti, Mumbai – 400 022

TELEPHONE NO. (022) 2405 6704 / 2405 6705

FAX NO. (022) 2405 6700

2. HAZARDS IDENTIFICATION:

Emergency Overview

OSHA Hazards: Combustible Liquid

Toxic by inhalation.
Toxic by ingestion
Toxic by skin absorption

Skin sensitizer

Moderate skin irritant
Moderate eye irritant
Moderate respiratory irritant

Carcinogenicity: Component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

No component of this product present at levels greater than or equal to 0.1% is identified as a known or Anticipated carcinogen by NTP.

3. FIRST AID MEASURES:

First aid procedures Inhalation: Remove from exposure site to fresh air and keep at rest. Obtain medical advice.

Skin Contact: Remove contaminated clothes. Wash thoroughly with water (and soap). Contact physician if symptoms persist.

Eye contact: Flush immediately with water for at least 15 minutes. Contact physician if symptoms persist.

Ingestion: Rinse mouth with water and obtain medical advice.

4. FIRE-FIGHTING MEASURES:

Flammable properties

Flash point: 114.80 °F(46.00 °C)

Fire fighting Suitable extinguishing media: Use water spray, dry chemical, carbon dioxide or appropriate foam.

Protective equipment and precautions for firefighters

Special protective equipment for fire-fighters: Wear NIOSH approved self-contained breathing apparatus and full protective clothing when fighting fires involving chemicals.

Use water spray to cool containers exposed to fire.

5. ACCIDENTAL RELEASE MEASURES:

Personal precautions: Avoid inhalation and contact with skin and eyes. A self-contained breathing apparatus is recommended in case of a major spill.

Environmental precautions: Keep away from drains, surface-and groundwater and soil.

Methods for containment/ Methods for cleaning up: Clean up spillage promptly. Remove ignition sources. Provide adequate ventilation. Avoid excessive inhalation of vapours.
Gross spillages should be contained by use of sand or inert powder and disposed of according to the local regulations.

6. HANDLING AND STORAGE:

Handling: Avoid excessive inhalation of concentrated vapors. Follow good manufacturing practices for housekeeping and personal hygiene. Wash any exposed skin immediately after any chemical contact, before breaks and meals, and at the end of each work period. Contaminated clothing and shoes should be thoroughly cleaned before re-use. If appropriate, procedures used during the handling of this material should also be used when cleaning equipment or removing residual chemicals from tanks or other containers, especially when steam or hot water is used, as this may increase vapor concentrations in the workplace air. Where chemicals are openly handled, access should be restricted to properly trained employees. Keep all heated processes at the lowest necessary temperature in order to minimize emissions of volatile chemicals into the air.

Advice on protection against fire and explosion: Keep away from ignition sources and naked flame.

Requirements for storage areas and containers: Store in a cool, dry, ventilated area away from heat sources. Keep containers upright and tightly closed when not in use.

7. EXPOSURE CONTROLS/PERSONAL PROTECTION:

Components with workplace control parameters Components Listed by Value type Exposure limit(s)
Cyclohexene, 1-methyl-4-(1-methylethenyl)-USA. Workplace Environmental Exposure Levels (WEEL)
8-hr TWA30 ppm

Engineering measures: Where feasible, isolate mixing rooms and other areas where this material is used or openly handled. Maintain these areas under negative air pressure relative to the rest of the plant. Where feasible, use closed systems to transfer and process this material

Personal protective equipment

Eye protection: Use tight-fitting goggles, face shield or safety glasses with side shields if eye contact might occur.

Hand protection: Avoid skin contact. Use chemically resistant gloves.

Respiratory protection: Use local exhaust ventilation around open tanks and other open sources of potential exposures in order to avoid excessive inhalation, including places where this material is openly weighed or measured. In addition, use general dilution ventilation of the work area to eliminate or reduce possible worker exposures. No respiratory protection is required during normal operations in a workplace where engineering controls such as adequate ventilation, etc. are sufficient. If engineering controls and safe work practices are not sufficient, an approved, properly fitted respirator with organic vapor cartridges or canisters and particulate filters should be used:

- a) while engineering controls and appropriate safe work practices and/or procedures are being implemented; or
- b) during short term maintenance procedures when engineering controls are not in normal operation or are not sufficient; or
- c) if normal operational workplace vapor concentration in the air is increased due to heat ;
- d) during emergencies; or
- e) if engineering controls and operational practices are not sufficient to reduce airborne concentrations below an established occupational exposure limit.

Hygiene measures: To the extent deemed appropriate, implement pre-placement and regularly scheduled ascertainment of symptoms and spirometry testing of lung function for workers who are regularly exposed to this material. To the extent deemed appropriate, use an experienced air sampling expert to identify and measure volatile chemicals that could be present in the workplace air to determine potential exposures and to ensure the continuing effectiveness of engineering controls and operational practices to minimize exposure.

Protective measures: In December 2003, the National Institute for Occupational Safety and Health ("NIOSH") published an Alert on preventing lung disease in workers who use or make flavorings [NIOSH Publication Number 2004-110].

In August 2004, the United States Flavor and Extract Manufacturers Association (FEMA) issued a report entitled "Respiratory Safety in the Flavor Manufacturing Workplace". Both of these reports provide recommendations for reducing employee exposure and for medical surveillance in the workplace. The recommendations in these reports are generally applicable to the use of any chemical in the workplace and you are strongly urged to review both of these reports.

The report published by FEMA also contains a list of "high priority" chemicals. If any of these chemicals are present in this product at a concentration $\geq 1.0\%$ due to an intentional addition by IFF, the chemical(s) will be identified in this safety data sheet.

8. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance Physical state :	liquid
Colour:	Colorless to pale yellow
Odour:	Conforms to Standard Safety data
Flash point:	114.80 °F(46.00 °C)
Vapour pressure:	2.44 hPa(1.83 mmHg)
Calculated Relative density (20 °C):	0.8540 -0.8700

9. STABILITY AND REACTIVITY:

Chemical stability Remarks:	Presents no significant reactivity hazard, by itself or in contact with water. Avoid contact with strong acids, alkali or oxidizing agents.
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Hazardous decomposition products :	Carbon monoxide and unidentified organic compounds may be formed during combustion.
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10. TOXICOLOGICAL INFORMATION:

Further information:	There is no data available for this product. The health hazards are assessed based on the ingredients in this preparation and their concentrations.
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11. ECOLOGICAL INFORMATION:

Additional ecological information : Avoid contamination of soil, ground and surface water.

12. DISPOSAL CONSIDERATIONS:

Contaminated packaging : Place material into sealed containers and dispose of in accordance with local, state and federal regulations.

13. REGULATORY INFORMATION:

OSHA Hazards:	Combustible Liquid, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Skin sensitizer, Moderate skin irritant, Moderate eye irritant, Moderate respiratory irritantSARA 311/312
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Hazards:	Fire Hazard
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Acute Health Hazard

HMIS Classification:

Health hazard:	2
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Flammability:	2
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Physical and chemical hazards: 0

14. TRANSPORT INFORMATION:

Proper shipping name: TERPINOLENE

Technical Name : LIMONENE, TERPINOLENE

UN-Number: 2541

Class: 3

Packing group: III

15. REGULATORY INFORMATION:

OSHA Hazards: Combustible Liquid, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption, Skin sensitiser, Moderate skin irritant, Moderate eye irritant, Moderate respiratory irritantSARA 311/312

Hazards: Fire Hazard

Acute Health Hazard

HMIS Classification:

Health hazard: 2

Flammability: 2

Physical and chemical hazards: 0

16. OTHER INFORMATION:

Further information

The information in this MSDS was obtained from current and reliable sources. However the data is provided without any warrant, expressed or implied, regarding its correctness or accuracy. Since the use, handling, storage and disposal of this product are beyond HTPL control, it is the responsibility of the user both to determine safe conditions for the use of this product and to assume liability of loss, damage, or expense arising out of the product's improper use. No warranty expressed or implied regarding the product described herein shall be created by or inferred from any statement or omission in this MSDS. Various Federal, State or Provincial agencies may have specific regulations concerning the transportation, handling, storage, use, or disposal of this product which may not be reflected in this MSDS. The user should review these regulations to ensure full compliance.