

L-MENTHOL (NATURAL, CRYSTALLINE)

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

L-MENTHOL (NATURAL, CRYSTALLINE)
(1R,2S,5R)-5-Methyl-2-(propan-2-yl)cyclohexan-1-ol; Natural Peppermint Camphor
CAS: 89-78-1

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Flavouring agent in food, confectionery, chewing gum and beverages; active ingredient/excipient in oral-care, pharmaceutical (topical analgesic, cough/cold preparations) and cosmetic products; fragrance component. For industrial/commercial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
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1.4 Emergency phone number:

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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Eye Irrit. 2	Eye irritation, Category 2, H319
Skin Irrit. 2	Skin irritation, Category 2, H315

L-Menthol is a naturally occurring cyclic terpene alcohol widely used as a flavouring and pharmaceutical/cosmetic active ingredient. Despite its widespread safe use at regulated concentrations, the pure substance meets the GHS criteria for mild eye and skin irritation on direct, undiluted contact.

2.2 GHS label elements, including precautionary statements:

GHS: Warning
Hazard statements:
Eye Irrit. 2: H319 – Causes serious eye irritation.
Skin Irrit. 2: H315 – Causes skin irritation.

Precautionary statements:

P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection.
P302+P352: IF ON SKIN: Wash with plenty of water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs: Get medical advice/attention.
P337+P313: If eye irritation persists: Get medical advice/attention.
P362+P364: Take off contaminated clothing and wash it before reuse.

2.3 Other hazards which do not result in classification:

May cause a cooling/burning sensation and transient localised numbness on direct skin/mucosal contact (pharmacological effect of menthol on cold-sensitive receptors), distinct from its irritant classification. Not a PBT or vPvB substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: L-Menthol – a naturally occurring monocyclic monoterpene alcohol, the levorotatory isomer of menthol, typically obtained from Mentha arvensis/Mentha piperita (peppermint/commint) oil
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 89-78-1	L-Menthol — Eye Irrit. 2: H319; Skin Irrit. 2: H315 – Warning	≥99.0% (natural crystalline grade, typical)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance if irritation is significant or persists, showing the SDS of this product.

By inhalation:

Remove the person affected to fresh air. Vapours/sublimate may cause transient irritation of the nose and throat with a characteristic cooling sensation. Seek medical attention if discomfort persists.

By skin contact:

Remove contaminated clothing. Wash the affected skin thoroughly with plenty of water and soap. A transient cooling/burning sensation may occur; this is a normal pharmacological effect of menthol. If irritation or redness persists, seek medical advice.

By eye contact:

Rinse eyes immediately and thoroughly with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses if present and easy to do. Seek medical attention promptly, as this product causes serious eye irritation.

By ingestion/aspiration:

Rinse the mouth with water. Do not induce vomiting. If a large quantity (beyond normal flavouring use) is swallowed, seek medical advice, showing this SDS.

4.2 Most important symptoms/effects, acute and delayed:

Eye and skin irritation as described in Section 2. Characteristic cooling sensation on mucous membranes and skin. No significant delayed effects known at normal exposure levels.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically. No specific antidote is required.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Water spray/fog, foam, dry chemical powder, carbon dioxide (CO₂).
Unsuitable: High-pressure water jet, which may scatter and spread burning material.

5.2 Specific hazards arising from the chemical:

Combustible organic solid. Sublimes readily at moderate temperature, producing flammable vapours that may form explosive mixtures with air. Fine crystalline dust dispersed in air in sufficient concentration may present a dust-explosion hazard in the presence of an ignition source. Combustion generates oxides of carbon.

5.3 Special protective actions for fire-fighters:

Evacuate non-essential personnel. Wear self-contained breathing apparatus (SCBA) and full protective clothing. Cool fire-exposed containers with water spray if safe to do so.

Additional provisions:

Avoid generating or dispersing dust clouds near ignition sources. Be aware of sublimation at elevated temperature.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Avoid direct contact with skin and eyes. Use the personal protective equipment described in Section 8. Ensure adequate ventilation, as sublimed vapours may accumulate in enclosed spaces.

For emergency responders:

Wear protective equipment as per Section 8. Keep unprotected persons away.

6.2 Environmental precautions:

Avoid large-scale discharge into drains or water courses. Low hazard to the environment; contain where practicable.

6.3 Methods and materials for containment and cleaning up:

Sweep or scoop up spilled material and place in a suitable closed container for recovery or disposal. Avoid generating dust. Ventilate the area to disperse any sublimed vapour.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Avoid contact with skin and eyes. Avoid inhalation of sublimed vapour/dust. Use with adequate ventilation. Wash hands thoroughly after handling.

B. Technical recommendations for the prevention of fires and explosions:

Keep away from open flames, sparks and other ignition sources. Use non-sparking tools and bond/ground equipment when handling powder in bulk. Be aware of the product's tendency to sublime and generate flammable vapour at elevated temperature.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling. Wash hands and exposed skin thoroughly after handling.

D. Technical recommendations to prevent environmental risks:

Avoid release to the environment. Keep containers tightly closed to minimise sublimation losses and odour.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Storage temperature	Cool, dry place, below 25°C (sublimes at room temperature if container not well sealed)
Relative humidity	Low humidity, in tightly closed, airtight containers
Shelf life (typical)	24 months from manufacture, unopened (typical value – refer to current specification sheet)

B. General conditions for storage:

Store in a cool, dry, well-ventilated place in tightly closed, airtight containers away from direct sunlight, heat sources and open flames, to minimise sublimation loss.

7.3 Specific end use(s):

Flavouring agent; pharmaceutical/cosmetic active ingredient and fragrance component. Refer to product-specific technical data sheet for application guidance.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

No specific occupational exposure limit (OEL) has been established for L-menthol under the Factories Act, 1948, or by ACGIH/OSHA. General dust/vapour exposure limits for substances not otherwise classified may be applied as a precaution – typical value, refer to current specification sheet.

8.2 Appropriate engineering controls:

Use local exhaust ventilation where dust or sublimed vapour may be generated, such as during bulk transfer, weighing or heating, to maintain airborne concentrations as low as reasonably practicable.

B. Respiratory protection:

Not normally required under good ventilation. For dusty operations or where sublimed vapour is present, use a particulate/organic vapour filter mask (P1/P2 or equivalent).

C. Specific protection for the hands:

Protective gloves (nitrile or similar chemically resistant material) recommended for all handling, given the skin-irritant classification.

D. Eye and face protection:

Chemical safety goggles recommended when handling powder, crystals or molten material, given the eye-irritant classification.

E. Bodily protection:

Standard industrial work clothing; food/pharma-grade handling areas should follow applicable hygiene/GMP protective clothing requirements.

F. Additional emergency measures:

Eyewash station and washing facilities should be readily available in the work area.

Environmental exposure controls:

No specific measures required beyond good housekeeping; avoid release of bulk quantities to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
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Physical state at 20°C	Solid (crystalline needles/prisms)
Appearance	Colourless to white crystalline solid
Color	Colourless/white
Odor	Characteristic strong peppermint odour with cooling sensation
Odour threshold	Very low (highly odorous); not established numerically
Volatility	
Boiling point at atmospheric pressure	212°C
Vapour pressure at 20°C	≈0.02 kPa (sublimes readily at room temperature)
Evaporation rate at 20°C	Moderate; sublimes slowly at room temperature
Product Description	
Molecular formula	C10H20O
Molecular weight	156.27 g/mol
Density / Relative density at 20°C	≈0.89 g/cm³
Concentration	≥99.0% (typical, natural crystalline grade)
pH	Not relevant (insoluble in water)
Partition coefficient n-octanol/water	log Pow = 3.4
Solubility in water at 20°C	Practically insoluble (≈0.45 g/L); freely soluble in ethanol, ether, chloroform and most organic solvents
Decomposition temperature	Not established (volatilises/sublimes before significant decomposition)
Melting point/freezing point	42–45°C
Flammability	
Flash Point	≈93°C (closed cup)
Flammability (solid, gas)	Combustible solid
Autoignition temperature	Not established
Lower / Upper flammability limit	Not established
Particle Characteristics	
Median particle size	Typical value – refer to current specification sheet

Values are typical for commercial natural crystalline L-menthol and may vary within specification tolerances.

9.2 Other information:

Explosive properties	Not explosive; fine dust may present a combustible-dust hazard
Oxidising properties	Not oxidising
Corrosive to metals	Not corrosive
Heat of combustion	Not established
Surface tension at 20°C	Not established
Refraction index	≈1.46 (molten, 50°C)

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

Stable under normal conditions of use. May react with strong oxidising agents, generating heat. Sublimes readily, which should be accounted for during storage and handling.

10.2 Chemical stability:

Chemically stable under recommended storage, handling and use conditions when kept in tightly closed containers away from heat.

10.3 Possibility of hazardous reactions:

No hazardous reactions expected under normal conditions of use.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Prolonged open exposure increases sublimation loss	Avoid heat (accelerates sublimation; may melt at >42°C)	Avoid prolonged direct exposure	Avoid excessive moisture

10.5 Incompatible materials:

Strong Oxidizers	Strong Acids/Bases	Heat Sources
Avoid contact	No significant reactivity expected; avoid prolonged contact	Avoid – accelerates sublimation/melting

10.6 Hazardous decomposition products:

Thermal decomposition/combustion at high temperature may release carbon monoxide and carbon dioxide.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

L-Menthol is widely used as a flavouring and pharmaceutical active ingredient at regulated concentrations. The pure substance, in concentrated/undiluted form, meets the GHS criteria for eye and skin irritation (see Section 2). The following effects may result depending on the means and extent of exposure:

A. Ingestion (acute effect):

Low acute oral toxicity. Excessive ingestion beyond intended flavouring/pharmaceutical use may cause gastrointestinal discomfort, nausea, and in large doses, central nervous system effects (e.g. ataxia, drowsiness).

B. Inhalation (acute effect):

Vapour/sublimate may cause irritation of the nose and respiratory tract with a characteristic cooling sensation; generally reversible.

C. Contact with skin and eyes (acute effect):

Causes skin irritation (H315) and serious eye irritation (H319) on direct, undiluted contact, accompanied by a characteristic cooling/burning sensation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. Not listed by IARC as a carcinogen.

E. Sensitizing effects:

Not classified as a respiratory sensitiser. Rare cases of skin sensitisation/allergic contact dermatitis have been reported in the literature with concentrated menthol; classification criteria for skin sensitisation are not met based on the overall weight of available data.

F. Specific target organ toxicity (STOT) – single exposure:

Classification criteria are not met based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure:

Classification criteria are not met based on available data.

H. Aspiration hazard:

Classification criteria are not met based on available data (solid at room temperature).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
L-Menthol CAS: 89-78-1	LD50 oral: 3,180 mg/kg	Rat
	LD50 dermal: >2,000 mg/kg (no mortality observed)	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment under GHS criteria based on available data; however, local effects at high concentration cannot be excluded.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: ≈10–30 mg/L (96h) – typical value, refer to current specification sheet	Non-applicable	Fish
EC50: ≈10–30 mg/L (48h) – typical value, refer to current specification sheet	Non-applicable	Crustacean (Daphnia)

12.2 Persistence and degradability:

Expected to be inherently/readily biodegradable, consistent with its natural terpenoid structure.

12.3 Bioaccumulative potential:

Moderate potential for bioaccumulation based on log Pow (≈3.4); not expected to be significant given rapid biodegradation and metabolism.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Moderate	Moderate (volatile)	Moderate mobility	Moderate mobility

12.5 Results of PBT and vPvB assessment:

Does not meet PBT/vPvB criteria.

12.6 Other adverse effects:

None known beyond those described above.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of in accordance with local, state and national regulations. Do not discharge concentrated material directly into waterways. Packaging should be emptied completely before disposal/recycling.

Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	Not regulated as dangerous goods for transport (ADR)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	Not regulated as dangerous goods for transport (IMDG)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	None
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	Not regulated as dangerous goods for transport (IATA)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not regulated
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	None
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

Permitted as a flavouring agent under the Food Safety and Standards Authority of India (FSSAI) regulations and as a pharmaceutical excipient/active per applicable Indian Pharmacopoeia (IP) monographs, subject to approved use levels. It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances.

Other legislation:

Food Safety and Standards Act, 2006 and associated Regulations (India)
The Factories Act, 1948, as amended
Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (not applicable to this classification – not a MSIHC-scheduled hazardous chemical)

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

H315: Causes skin irritation.

H319: Causes serious eye irritation.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Published GHS classification databases and standard commercial safety data references for L-menthol (CAS 89-78-1).

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer | IP: Indian Pharmacopoeia | FSSAI: Food Safety and Standards Authority of India

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET