Safety Data Sheet (MSDS)

- Cardamom Oil

*(According to GB/T 16483 and GB/T 17519; Adapts to GHS, IMDG, IATA Standards)***Product Name**: Cardamom Oil**Revision Date**: 24 FEB 2026

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: Cardamom Oil
- Synonyms: Green Cardamom Oil; Elettaria cardamomum oil; Natural cardamom essential oil
- Product Number: CAR-20260224
- Brand: SIGALD
- CAS-No.: 8000-66-6
- MDL Number: MFCD00147994
- Main Component: 1,8-Cineole (CAS: 470-82-6, ≥35%)
- Molecular Weight: Variable (natural mixture)

1.2 Details of the supplier of the safety data sheet

- Company: NEWAY SINOPHC TECH. LIMITED
- Address: RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE
- Telephone: +86-021-50350029
- Fax: +86-021-50350029

1.3 Emergency telephone

- Emergency Phone #: +86-021-50350029 (CHEMTREC)

1.4 Relevant Identified Uses and Uses Advised Against

- **Identified Uses**: Fragrance & flavor industry raw material; food additive; cosmetic formulation; aromatherapy; oral care product ingredient; pharmaceutical excipient.
- **Uses Advised Against**: Direct undiluted skin/eye contact; excessive oral consumption; use in infant cosmetics (0-3 years old) without dilution; use near open flame/high temperature without protection.

SECTION 2: Hazards Identification

2.1 GHS Classification

- Flammable Liquid, Category 4 (H227)
- Eye Irritation, Category 2 (H319)
- Skin Irritation, Category 2 (H315)
- Aquatic Acute Toxicity, Category 3 (H402)
- Aquatic Chronic Toxicity, Category 3 (H412)

2.2 GHS Label Elements

- **Hazard Pictograms**: (Exclamation mark)
- **Signal Word**: Warning
- **Hazard Statements**:
  - H227: Combustible liquid
  - H315: Causes skin irritation
  - H319: Causes serious eye irritation
  - H402: Harmful to aquatic life
  - H412: Harmful to aquatic life with long-term effects
- **Precautionary Statements**:
  - P210: Keep away from heat, sparks, open flames and hot surfaces
  - P264: Wash hands thoroughly after handling
  - P273: Avoid release to the environment

- P280: Wear protective gloves/eye protection
- P302+P352: If on skin: Wash with plenty of soap and 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: Take off contaminated clothing and wash before reuse
- P370+P378: In case of fire: Use dry powder, CO_2 or foam for extinction
- P391: Collect spillage
- P501: Dispose of contents/container to an approved waste disposal plant

2.3 Physical and Chemical Hazards

Combustible liquid (flash point >60℃); no explosive hazard; slight oxidation may occur upon long-term exposure to air/light (minor color change); no corrosive or oxidizing properties; vapor may form weak flammable mixtures with air at high temperature.

2.4 Health Hazards

- **Acute**: Causes mild skin irritation and serious eye irritation; inhalation of high-concentration vapor may cause mild respiratory tract irritation (cough, throat dryness); undiluted contact may aggravate irritation in sensitive individuals.
- **Chronic**: No known chronic toxic effects, target organ damage or skin sensitization potential with normal diluted use.

2.5 Environmental Hazards

Harmful to aquatic organisms with acute and long-term effects; low bioaccumulation potential in aquatic food chains; no obvious adverse effects on soil microorganisms at low concentrations.

2.6 Other Hazards

No additional hazards identified.

SECTION 3: Composition/Information on Ingredients

- **Substance / Mixture**: Natural essential oil mixture (steam-distilled from *Elettaria cardamomum* seeds)
- **Main Active Component**: 1,8-Cineole ($C_{10}H_{18}O$, CAS 470-82-6, 35.0-45.0%)
- **Other Minor Components**: Limonene, linalool, terpinyl acetate (natural trace amounts)

Hazardous Ingredients	CAS No.	Concentration (w/w)	GHS Classification
1,8-Cineole	470-82-6	35.0-45.0%	H315, H319, H402, H412
Cardamom Oil (mixture)	8000-66-6	100%	H227, H315, H319, H402, H412

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- **If Inhaled**: Move victim to fresh air, keep at rest in a comfortable breathing position. If cough or chest tightness persists for more than 1 hour, consult a doctor.
- **In Case of Skin Contact**: Immediately rinse skin with plenty of running water and mild soap for 10-15 minutes; remove contaminated clothing and wash thoroughly before reuse.
- **In Case of Eye Contact**: Rinse eyes thoroughly with plenty of running water for 15-20 minutes (hold eyelids open to ensure full rinsing); remove contact lenses if present and easy to do. Consult a doctor immediately if irritation, redness or pain persists.
- **If Swallowed**: Rinse mouth with clean water; do not induce vomiting. Call a poison center or doctor if gastrointestinal discomfort (nausea, abdominal pain) occurs or large quantities are ingested.

4.2 Most Important Symptoms and Effects

- **Acute**: Skin redness, slight itching or tingling; eye redness, tearing, pain; mild cough, throat irritation (high-concentration vapor inhalation).
- **Delayed**: No known delayed toxic effects with normal exposure and proper first aid.

4.3 Indication of Immediate Medical Attention

Seek medical attention for severe eye irritation (persisting over 24 hours), persistent skin irritation, excessive oral ingestion (≥10mL for adults) or severe respiratory discomfort (difficulty breathing, chest pain).

4.4 Notes to Physician

Treat symptomatically; inform the physician of the main component (1,8-Cineole) and CAS number of the product; no specific antidote available.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- **Suitable**: Dry powder, carbon dioxide (CO_2), alcohol-resistant foam, water spray (for cooling containers only, not direct fire extinguishing).
- **Unsuitable**: High-pressure water jet (may spread the combustible liquid and expand the fire range).

5.2 Special Hazards Arising from the Substance

High-temperature combustion may produce carbon oxides (CO, CO_2) and mild aromatic fumes; no toxic or corrosive combustion products. Vapor may travel to ignition sources and flash back at high temperature (>120℃).

5.3 Advice for Firefighters

- Wear standard fire-fighting gear (helmet, fire suit, self-contained breathing apparatus) to avoid inhalation of combustion fumes and vapor.
- Cool containers exposed to fire with continuous water spray until well after the fire is out; maintain a safe distance when fighting fire.
- Prevent fire water from entering drains, rivers or other water bodies to avoid environmental contamination.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions

- Wear nitrile rubber gloves, chemical safety goggles and disposable face mask when cleaning up spills; avoid latex gloves (may be degraded by oil components).
- Ensure good ventilation in the spill area; eliminate all ignition sources (no smoking, no sparks from electrical equipment); keep away from heat and open flames.

6.2 Environmental Precautions

- Prevent spilled liquid from entering drains, sewers, rivers, lakes or soil; use inert absorbent materials to contain spillage immediately and avoid environmental pollution.

6.3 Methods and Materials for Containment and Cleaning Up

- **Small Spill**: Absorb with inert materials (sand, diatomaceous earth, vermiculite), transfer to a sealed fire-resistant container for proper disposal; wipe the contaminated area with ethanol and water mixture (1:1) to remove residues.
- **Large Spill**: Contain the liquid with sand dikes or plastic barriers; pump the spilled oil into sealed HDPE drums for recycling or professional disposal by licensed facilities; do not flush directly with water.

6.4 Reference to Other Sections

For waste disposal of spilled material, see Section 13.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated area; avoid breathing vapor, undiluted skin contact and eye contact.
- Use diluted (1:10-1:50) for skin/cosmetic/oral care application; no undiluted direct use on human body.
- Keep away from heat, sparks, open flames and hot surfaces (>60℃); use explosion-proof electrical equipment for large-scale production and handling.
- Do not eat, drink or smoke during handling; wash hands and face thoroughly with soap and water after operation.
- Avoid mixing with other chemicals without prior compatibility testing.

7.2 Conditions for Safe Storage

- **Storage Conditions**: Store in a cool, dark, well-ventilated fire-resistant warehouse at 10-25℃; keep container tightly sealed with teflon stopper to prevent vapor loss and oxidation; avoid direct sunlight and high temperature (>30℃).
- **Incompatibilities**: Strong oxidizing agents (hydrogen peroxide, potassium permanganate), concentrated mineral acids, strong bases, heavy metal salts, rubber products (except nitrile).
- **Storage Class (TRGS 510)**: 3 (Flammable Liquids, Category 4)
- **Shelf Life**: 24 months (unopened, under specified storage conditions); nitrogen-filled packaging can extend shelf life to 36 months.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- **Occupational Exposure Limit (OEL)**: 1,8-Cineole - TWA: 25 ppm (120 mg/m³) (US ACGIH); Cardamom Oil - no unified OEL (follow 1,8-Cineole standard).

8.2 Exposure Controls

- **Engineering Controls**: Install local exhaust ventilation at operation points (e.g., distillation, blending) to reduce vapor concentration; use closed-loop equipment for large-scale production to minimize exposure.
- **Personal Protective Equipment (PPE)**:
  - Eye/Face Protection: Chemical safety goggles (prevent splashing and vapor irritation); face shield recommended for large-scale handling and pouring.
  - Skin Protection: Nitrile rubber gloves (thickness ≥0.11 mm), chemical-resistant protective clothing (cotton or polyester material).
  - Respiratory Protection: Organic vapor cartridge respirator for routine handling; no respiratory protection needed under well-ventilated conditions.
  - Hand Protection: Replace nitrile gloves immediately if damaged, contaminated or after 4 hours of continuous use.

8.3 Hygiene Measures

- Provide eye wash and emergency hand wash facilities in the workplace (within 5 meters of operation area); change contaminated clothing immediately.
- Avoid touching eyes, mouth and nose with contaminated hands; do not reuse contaminated gloves, rags or cleaning materials.
- Clean the operation area regularly; store cleaning waste in sealed containers for proper disposal.

SECTION 9: Physical and Chemical Properties

1. Physical State: Clear mobile liquid
2. Color: Colorless to pale yellow
3. Odor: Strong, fresh, spicy-sweet aromatic cardamom scent with citrus notes
4. Boiling Point: 176-180℃ (main component 1,8-Cineole)

5. Flash Point: 72℃ (Closed Cup)
6. Autoignition Temperature: > 390℃
7. Refractive Index (20℃): 1.4600-1.4700
8. Relative Density (20/20℃): 0.910-0.930
9. Optical Rotation (20℃): +15.0° to +40.0°
10. Solubility: Soluble in ethanol, ether, propylene glycol, vegetable oil; slightly soluble in water (<0.2 g/100 mL at 25℃)
11. Vapor Pressure (25℃): < 0.002 hPa
12. Viscosity (25℃): 8-15 mPa·s
13. Acid Value: ≤ 2.0 mg KOH/g
14. Decomposition Temperature: > 200℃ (slight thermal decomposition, no toxic products)
15. Evaporation Rate: Moderate (slower than ethanol, faster than vegetable oil)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability

Stable under recommended storage conditions (10-25℃, sealed, dark); slight oxidation may occur upon long-term exposure to air/light (minor pale yellow discoloration, no hazard to efficacy and safety).

10.2 Possibility of Hazardous Reactions

No hazardous reactions (e.g., polymerization, violent decomposition) under normal use and storage conditions.

10.3 Conditions to Avoid

High temperature (>30℃), direct sunlight, long-term exposure to air, contact with strong oxidizing agents/acids/alkalis, open flame and heat sources, mixing with incompatible materials.

10.4 Incompatible Materials

Concentrated sulfuric acid, nitric acid, hydrogen peroxide, potassium permanganate, concentrated sodium hydroxide, iron chloride, copper sulfate, natural rubber products.

10.5 Hazardous Decomposition Products

Carbon monoxide (CO), carbon dioxide (CO_2) (high-temperature combustion); slight aromatic oxides from oxidation (no toxic or corrosive decomposition products).

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity**:
  - Oral (Rat, LD_{50}): 3800 mg/kg (Cardamom Oil); 2400 mg/kg (1,8-Cineole)
  - Dermal (Rabbit, LD_{50}): > 5000 mg/kg (Cardamom Oil)
  - Inhalation (Rat, LC_{50}): > 5000 mg/m³ (4-hour exposure, vapor)
- **Skin Corrosion/Irritation**: Category 2, causes mild skin irritation (Rabbit, 4-hour exposure; reversible redness).
- **Serious Eye Damage/Eye Irritation**: Category 2, causes serious eye irritation (Rabbit, 24-hour exposure; redness and tearing).
- **Skin/Respiratory Sensitization**: No sensitizing effects (Guinea pig test, negative for both skin and respiratory sensitization).
- **Germ Cell Mutagenicity**: Negative (Ames test, in vitro).
- **Carcinogenicity**: Not classified as carcinogenic (IARC Group 3; no sufficient evidence for human or animal carcinogenicity).
- **Reproductive Toxicity**: No reproductive toxicity (Rat test, normal diluted dosage; no adverse effects on fertility and fetal development).

- **Specific Target Organ Toxicity**: No target organ toxicity with normal diluted exposure (1:10 or lower).
- **Aspiration Hazard**: Low (low viscosity, no aspiration risk under normal use conditions).

SECTION 12: Ecological Information

12.1 Toxicity

- Fish (Zebrafish, LC_{50}): 35 mg/L (96-hour exposure)
- Daphnia (EC_{50}): 20 mg/L (48-hour exposure)
- Algae (EC_{50}): 42 mg/L (72-hour exposure)

12.2 Persistence and Degradability

Fully biodegradable (BOD_5/COD = 0.70) in natural aquatic environments; degradation rate > 75% in 28 days by microorganisms.

12.3 Bioaccumulative Potential

Low bioaccumulation potential (BCF < 120, fish test); no biomagnification in aquatic food chains (concentration does not increase with trophic level).

12.4 Mobility in Soil

Low mobility in soil; binds strongly to soil organic matter (Koc = 480); readily degraded by soil microorganisms (no soil accumulation risk).

12.5 PBT/vPvB Assessment

Not classified as PBT/vPvB (meets biodegradability, low bioaccumulation and low persistence criteria).

12.6 Other Adverse Effects

Harmful to aquatic invertebrates at high concentrations; no eutrophication risk (no nitrogen/phosphorus components); no adverse effects on terrestrial plants at normal use concentrations.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste**: Unused or contaminated Cardamom Oil shall be disposed of to licensed waste treatment facilities; incineration with flue gas treatment is the recommended method (no toxic residues); do not dump into the environment or pour into drainage systems.
- **Packaging Waste**: Rinse packaging with ethanol to remove oil residuals, then dispose of as flammable non-hazardous packaging waste or recycle after professional decontamination (for glass/HDPE packaging).
- **Spilled Waste**: Collect all spilled material in sealed containers and dispose of as product waste; do not mix with domestic waste or agricultural fertilizer.

13.2 Disposal Notes

Comply with China's Solid Waste Pollution Control Law and EU REACH waste disposal regulations; handle all waste as combustible non-hazardous waste; avoid environmental release during disposal; do not discharge waste water from cleaning into natural water bodies.

SECTION 14: Transport Information

14.1 UN Number

ADR/RID: 1993; IMDG: 1993; IATA-DGR: 1993

14.2 UN Proper Shipping Name

ADR/RID: Flammable liquids, n.o.s. (Cardamom Oil); IMDG: Flammable liquids, n.o.s. (Cardamom Oil); IATA-DGR: Flammable liquids, n.o.s. (Cardamom Oil)

14.3 Transport Hazard Class(es)

ADR/RID: 3; IMDG: 3; IATA-DGR: 3 (Packing Group III)

14.4 Packaging Group

ADR/RID: III; IMDG: III; IATA-DGR: III

14.5 Environmental Hazards

ADR/RID: No; IMDG Marine Pollutant: No; IATA-DGR: No

14.6 Special Precautions for User

- Transport in sealed, light-proof HDPE plastic drums or brown glass bottles (small package); use fire-resistant packaging for bulk transport (200L drums).
- Avoid collision, extrusion, direct sunlight, high temperature and rain during transport; keep away from heat, sparks, open flames and oxidizing agents.
- Transport in accordance with national and international flammable liquid transport regulations; load and unload gently to prevent packaging damage and leakage.
- No mixed transport with food, beverages, drugs, infant products, strong oxidizing agents, concentrated acids and alkalis; ensure good ventilation in transport vehicles.
- Mark the package with "FLAMMABLE LIQUID" hazard label and product information clearly.

SECTION 15: Regulatory Information

15.1 National and International Regulations

- **China**: GB 2760-2021 (approved food flavor additive); Cosmetic Safety Technical Specification (2015 version, approved for cosmetic use); Hazardous Chemicals Safety Management Regulation (Class 3 flammable liquid, non-toxic category).
- **EU**: REACH (registered); CLP (GHS classification as H227, H315, H319, H402, H412); Cosmetics Regulation (EC 1223/2009, approved for cosmetic use); IFRA (International Fragrance Association) standards compliant; EU Food Contact Materials Regulation (EC 1935/2004) compliant for food grade products.
- **US**: TSCA (listed on inventory); FDA (approved for food flavor use, 21 CFR); OSHA (flammable liquid standard compliant).
- **International**: GHS Rev.9 (classification compliance); IMDG Code (Class 3 flammable liquid); Codex Alimentarius (approved food additive); FAO/WHO food additive standards compliant.

15.2 Other Regulations

Comply with local fragrance, food and cosmetic raw material safety standards; comply with aquatic environmental protection and flammable liquid storage/transport regulations; meet organic product standards (EU ECOCERT, US NOP) for organic grade Cardamom Oil.

SECTION 16: Other Information

- **Further Information**: This MSDS is based on current scientific and regulatory information, complying with GB/T 16483, GB/T 17519, GHS, IMDG and IATA standards. It is for safe handling, storage, transport and disposal of the product. The supplier is not liable for damage caused by improper use, non-compliance with safety precautions or unauthorized mixing with other materials.
- **Revision Note**: This is the first revision of the MSDS for Cardamom Oil (CAS 8000-66-6) of brand SIGALD.
- **Contact for Further Information**: NEWAY SINOPHC TECH. LIMITED, Tel: +86-021-50350029; technical support for application and formulation available 24/7.