

Full Scenario Application Manual for Litsea Cubeba Oil from HiSiaddi

Applicable Users: Flavor factories, food processing plants, daily chemical factories, pharmaceutical intermediate enterprises, warehousing & agriculture, foreign trade exporters

I. Product Basic Overview

1.1 Basic Information

- Common Names: Litsea Cubeba Oil, May Chang Oil
- English Name: Litsea Cubeba Essential Oil / May Chang Oil
- CAS No.: 68855-99-2; FEMA No.: 3846
- Extraction Process: Steam distillation of fresh litsea cubeba fruits, secondary rectification and grading
- Core Active Ingredient: Citral (Neral + Geranial) 66%~85%, determines aroma, bacteriostatic effect and industrial synthesis value
- Applicable Standards:
Food Grade: GB 1886.35-2015, GB/T 11424-2008, FEMA GRAS
Industrial Grade: ISO 3214; Export Compliance: REACH, TSCA, CLP

1.2 Core Physicochemical & Functional Advantages

1. Fragrance Value: The world's largest natural source of citral, far lower cost than lemon peel oil, used to synthesize ionone, Vitamin A/E
2. Broad-Spectrum Bacteriostasis: Inhibits Escherichia coli, Staphylococcus aureus, Candida albicans, Aspergillus niger and Aspergillus flavus; can degrade aflatoxin
3. Natural Insect Repellent: Repels mosquitoes, storage pests and grain molds with no chemical pesticide residues
4. Pharmacological Activity: Dispel wind and inhibit bacteria, relieve respiratory discomfort, dilute for external use to ease skin itching
5. Safety Attribute: Compliant food additive from natural plant source, can replace chemical preservatives

II. Standardized Application Solutions for Five Major Fields (Including Dosage, Process & Notes)

2.1 Fragrance Chemical Industry (Largest Application Track)

2.1.1 Isolation of Citral (Deep Processing Raw Material)

- Purpose: Separate high-purity citral to synthesize ionone, methyl ionone, irone, vitamin series, citronellol, menthol
- Process: Vacuum high-temperature separation via rectification column
- Raw Material Selection: Industrial grade litsea cubeba oil with citral $\geq 74\%$
- Feeding Ratio: 100% crude oil directly fed into rectification equipment

- Added Value of Output: High-purity citral 95%~98%, price dozens of times higher than crude oil

2.1.2 Daily Chemical Fragrance Blending (Perfume, Washing Care, Aroma Candles)

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Fragrance Category	Recommended Addition Ratio	Aroma Effect
Citrus Perfume, Eau de Cologne	0.5%~3%	Fresh lemon fruity top note, improves transparency
Soap, Laundry Detergent, Dishwashing Liquid	1%~5%	Mask chemical raw material odor, inherent deodorization & bacteriostasis
Fragrance, Aroma Diffuser, Candles	2%~8%	Long-lasting fresh scent, neutralizes indoor mold odor
Air Freshener, Car Fragrance	0.8%~2.5%	Natural deodorant, substitute synthetic lemon fragrance

- Compatible Raw Materials: Linalool, Limonene, Orange Peel Oil, Lavender Oil, Citronella Oil for synergistic enhancement

2.2 Food Industry (Food Grade Only, Must Comply with GB1886.35)

2.2.1 Direct Flavoring (Catering, Compound Condiments)

1. Cold Dishes, Sour Soup, Dipping Sauces: Add 0.01%~0.05% (2~3 drops) per 500g ingredients, add at low temperature after heating to avoid volatile loss at high temperature
2. Meat Curing (Sausages, Cured Meat, Marinades): 0.02%~0.1%, inhibits bacteria to extend shelf life, removes fishy odor and enhances flavor
3. Rice Noodles, Soup Base, Hot Pot Base: 0.01%~0.08%, neutralizes greasiness with unique fresh lemon flavor

2.2.2 Food Flavor Production (Beverages, Candy, Baking)

- Beverages (Soda, Fruit Juice, Tea Drinks): Add 0.3%~1.2% in flavor; final concentration in finished beverage $\leq 0.005\%$
- Hard Candy, Chewing Gum: 1%~3% in flavor; use antioxidant modified oil for high-temperature baking
- Pastries, Biscuit Baking: 0.005%~0.03% based on flour weight, add at low-temperature mixing stage

2.2.3 Natural Food Antiseptic Preservation (Substitute Sodium Benzoate, Sorbic Acid)

- Soy Sauce, Sauces, Broad Bean Paste: 0.03%~0.08%, inhibits mold with aflatoxin inhibition rate over 92%
- Pastries, Vacuum-Packaged Cooked Food: Microcapsule embedded litsea cubeba oil sprayed on inner packaging film
- Fruit & Vegetable Preservation Soaking Liquid: Spray with 0.01% diluted aqueous solution to extend shelf life by 3~7 days

Mandatory Food Usage Specifications

1. Only food-grade litsea cubeba oil can be ingested; industrial grade is strictly prohibited from contact with food
2. Rapid oxidation and deactivation above 120°C, feed at low temperature as much as possible
3. Daily oral intake shall not exceed 5 drops; reduce dosage for people with sensitive stomachs

2.3 Daily Chemical Cosmetics & Personal Care Products (Skin Care, Washing Care, Aromatherapy)

2.3.1 External Skin Care (Must Dilute, Undiluted Prohibited Direct Skin Contact)

General Industry Dilution Safety Standard:

- Body Massage Oil, Body Lotion: 1%~2% (10ml base oil + 2~4 drops litsea cubeba oil)
 - Facial Essence, Sensitive Skin Products: ≤0.5% (low irritation formula)
 - Acne Inhibiting Gel, Itch Relief Ointment: 0.8%~1.5%, effective for fungal dermatitis and back acne
- Recommended Base Oils: Sweet Almond Oil, Jojoba Oil, Fractionated Coconut Oil

2.3.2 Washing & Cleaning Products

- Shampoo, Body Wash: 0.05%~0.2%, relieves dandruff, inhibits Malassezia and eliminates body odor
- Hand Sanitizer, Disinfectant Washing Liquid: 0.1%~0.3%, natural bacteriostasis with mild irritation
- Cold Process Soap: 0.3%~0.8% of total oil weight, add at low temperature before molding

2.3.3 Aroma Diffusion Applications

1. Ultrasonic Diffuser: 3~5 drops in 100ml water, purifies indoor mold and peculiar odor, inhibits airborne planktonic bacteria
2. Aroma Candles, Reed Diffusers: 2%~5% added in fragrance liquid
3. Fumigation Foot Bath: 2 drops in 3L warm water (emulsified before use to avoid floating oil skin irritation)

Daily Chemical Safety Taboos

Citral is a fragrance allergen; EU CLP regulation requires allergen labeling on product packaging. Sensitive skin and citrus allergy users shall conduct patch test behind ears before use.

2.4 Pharmaceutical, Disinfection & Bacteriostatic Preparations

2.4.1 External Bacteriostatic Products (Disinfection Brand Products)

- Skin Bacteriostatic Spray, Tinea Pedis Liquid: Diluted 0.5%~1.2%, targets *Candida albicans* and dermatophytes
- Mild Feminine Care Wash: Low concentration compound 0.01%~0.05%
- Wound Care Oil: Dilute 1% in base oil, anti-inflammatory, bacteriostatic and accelerates superficial wound repair

2.4.2 Traditional Chinese Medicine Raw Materials & Hospital Preparations

Traditional Chinese Medicine Efficacy: Dispel wind and cold, regulate qi to relieve pain, dispel dampness and relieve itching; applicable for wind-cold cold, stomach cold distending pain and skin damp itching.

Usage: Dilute and blend for external use, rarely taken orally as medicinal material.

2.4.3 Space Disinfection Spray

Dilution Formula: 1 part litsea cubeba oil + 10 parts ethanol + 89 parts pure water, spray enclosed space to eliminate airborne mold and peculiar odor.

2.5 Agriculture, Warehousing & Grain Preservation (Green Biological Mildew Prevention & Insect Repellent)

2.5.1 Grain Storage Mildew Prevention (Rice, Corn, Wheat, Peanuts)

- Sustained Release Embedded Particles: Put 50~100g carrier adsorbed with litsea cubeba oil per ton of grain
- Advantages: Strong aflatoxin inhibition, no grain pollution, free of chemical pesticide residues, compliant with green grain and oil standards

2.5.2 Fruit & Vegetable Cold Storage Preservation (Citrus, Strawberry, Mango, Edible Fungi)

- Atomized Fumigation: 0.02ml litsea cubeba oil per cubic meter of cold storage for closed fumigation to reduce rot rate

2.5.3 Biological Insect Repellent & Botanical Pesticide

1. Vegetable Aphid & Whitefly Repellent: Foliar spray with 0.05% diluent every 7 days
2. Storage Pests (Rice Weevil, Grain Beetle): Place cotton strips adsorbed with crude oil at four corners of grain stacks

3. Livestock Barn Deodorization & Bacteriostasis: Dilute and spray to reduce ammonia gas and pathogenic bacteria

III. General Process Key Points for Processing & Application

3.1 General Mixing & Feeding Methods

1. Oil-Based Systems (Fragrance, Washing Oil, Oil Base): Direct stirring and mixing below 40°C
2. Aqueous Systems (Beverages, Water Agents, Washing Liquids): Must pre-dissolve with ethanol / Tween emulsifier first, then slowly add water to avoid stratification and floating oil
3. Solid Powder (Baking, Spice Powder): Pre-dilute with a small amount of maltodextrin / cyclodextrin carrier first, then expand mixing with bulk materials
4. Long-Lasting Sustained Release Solution: β -cyclodextrin microcapsule embedding, greatly improves citral oxidation resistance, temperature resistance and sustained release duration

3.2 Antioxidant Stabilization Solution (Solve the Problem of Easy Oxidation & Rancidity of Litsea Cubeba Oil)

1. Storage: Nitrogen-filled light-proof sealed packaging, store at 4~8°C for food grade for extended shelf life below 25°C
2. Product Compound Addition: 0.01%~0.05% Vitamin E, rosemary extract
3. Contact Avoidance: Copper, iron metal containers, strong oxidants, strong acids and alkalis

IV. Safe Operation Specifications (Supplementary Practical Guidelines for SDS)

4.1 Personal Protection

1. Crude Oil Operation: Nitrile oil-resistant gloves, chemical safety goggles, fume hood / workshop exhaust ventilation
2. Forbid direct contact of undiluted oil with mucous membranes: eyes, mouth, nasal cavity; rinse with plenty of running water for 15 minutes and seek medical treatment in case of accidental contact
3. Skin Contamination with Crude Oil: Immediately wash with soap and water; discontinue use and cold compress if redness occurs

4.2 Fire & Spill Disposal

- Flash point 54.4°C, flammable liquid, keep away from open flame, static electricity and high-temperature heat sources
- Small Spills: Absorb with absorbent cotton or sand, collect into sealed hazardous waste barrels

- Fire Extinguishing Agents: Dry powder, CO₂, foam; prohibit direct water jet impact on liquid surface

4.3 Incompatible Materials

Do not mix directly with the following materials: hypochlorite bleach, hydrogen peroxide, concentrated nitric acid, potassium permanganate and other strong oxidants, which may cause heating, deterioration or even fire.

V. Grade Selection Guide (Select Corresponding Grade by Application)

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Grade	Citral Content	Applicable Scenarios	Prohibited Uses
Food Rectified Grade	≥66% GB1886.35	Food Flavoring, Edible Fragrance, Food Antiseptic	Industrial Rectification for Citral Isolation
Daily Chemical Fragrance Grade	70%~78%	Washing Care, Aroma Diffuser, Perfume, Cosmetics	Oral Food Processing
Industrial Rectified Grade	≥74%	Citral Isolation, Chemical Synthesis Raw Materials	Food, High-Concentration Direct Skin Coating
Supercritical Pharmaceutical Grade	≥80%	Disinfection Brand Bacteriostatic Preparations, High-End Aromatherapy	Mass Industrial Chemical Synthesis

VI. Storage, Packaging & Shelf Life

1. Packaging Specifications: 25kg/200kg food-grade galvanized iron drums, IBC tote tanks, 5L light-proof brown glass bottles
2. Storage Conditions: Light-proof, sealed, cool and dry warehouse, temperature ≤25°C, store separately from oxidants
3. Unopened Shelf Life: 12 months; use within 3 months after opening, refrigeration extends to 6 months
4. Deterioration Judgment: Dark brown discoloration, rancid pungent odor, layered turbidity; forbidden for production input

VII. Export Compliance Tips (Special for Foreign Trade Customers)

1. EU Market: Provide REACH registration number, CLP label, 16-section SDS, allergen ingredient list (citral labeling)
2. US Market: TSCA Inventory inclusion certificate, FEMA 3846 GRAS certificate, batch COA test report

3. Southeast Asia Food Export: Provide national food additive qualification, heavy metal / microbial test COA
4. Transportation Classification: UN1993 Class III flammable liquid, hazardous goods declaration for sea / land transportation

VIII. Common Application Q&A

1. Q: Why does litsea cubeba oil separate after mixing with water?
A: Must pre-dissolve essential oil with 10%~20% ethanol or food-grade Tween 20 first, then slowly add water with high-speed emulsification.
2. Q: Aroma disappears after high-temperature baking?
A: Adopt cyclodextrin microcapsule embedded litsea cubeba oil, control feeding temperature below 80°C.
3. Q: Skin itching and redness after use?
A: Citral is an allergen, reduce dilution ratio to 0.5%, replace mild base oil, discontinue use for allergy-prone skin.
4. Q: Poor grain mildew prevention effect?
A: Switch to sustained release adsorption carrier, use in closed storage environment; rapid volatilization in open space leads to failure.

Would you like me to export this manual into a Chinese-English bilingual foreign trade version, or split it into a simplified food processing operation page / daily chemical formula quick reference table?