

Technical Data Sheet (TDS)

- Nutmeg Oil

Revision Date: 23 February 2026 **Product Number:** NO-20260223 **CAS Number:** 8008-45-3 **Main Components:** Sabinene ($\geq 25\%$), α -Pinene, Myristicin (2-8%) **Source:** Steam-distilled from dried kernels of *Myristica fragrans*

1. Product Overview

Nutmeg Oil is a premium essential oil extracted via steam distillation from the dried kernels of the nutmeg tree. It possesses a rich, warm, spicy, and slightly woody aroma with sweet undertones, making it a classic base and middle note in perfumery. Valued for its aromatic and functional properties, it is widely used in the food industry for flavoring baked goods, beverages, and savory dishes. In cosmetics, it is utilized for its warming sensation and fragrance. This product is 100% natural, free from synthetic additives, and complies with international regulatory standards.

2. Technical Specifications

Item	Specification
Physical State	Mobile liquid (25°C)
Color	Colorless to pale yellow
Aroma	Warm, spicy, woody, sweet
Relative Density (20/20°C)	0.880 - 0.910
Refractive Index (20°C)	1.4800 - 1.4900
Optical Rotation (20°C)	+10° to +25°
Flash Point (Closed Cup)	$\geq 70^\circ\text{C}$ (Flammable)
Solubility	Soluble in 90% ethanol, fixed oils, organic solvents; Insoluble in water
Stability	Stable under cool, dark conditions. Oxidizes upon prolonged exposure to air/light.

3. Product Advantages

- Authentic Aroma:** Retains the characteristic warm, spicy profile of natural nutmeg.
- Standardized Composition:** Strict control over Myristicin content ensures safety and consistency.
- Multi-Application:** Versatile use in food, fragrances, cosmetics, and aromatherapy.
- Regulatory Compliance:** Meets IFRA, REACH, FDA, and China Cosmetic Safety Technical Specifications (2021).
- High Purity:** Steam-distilled, no solvent residues or artificial contaminants.

4. Application Fields

- Food & Beverage:** Baked goods (cakes, cookies), dairy products, confectionery, liqueurs (e.g., eggnog), and savory sauces (food grade only).
- Perfumery & Fragrances:** Oriental, spicy, and woody fragrance compositions; soaps, candles, and air fresheners.
- Cosmetics & Personal Care:** Massage oils, body lotions, and men's grooming products (for warming effect).
- Aromatherapy:** Used for its calming and grounding properties (in low dilutions).
- Household:** Natural flavoring for potpourri and scented products.

5. Usage Methods

5.1 Recommended Dosage (by weight)

- **Food Flavoring:** 0.005% - 0.05% (Strictly adhere to limits due to Myristicin content)
- **Fine Fragrances:** 2.0% - 8.0%
- **Cosmetics & Toiletries:** 0.1% - 1.0% (Must be diluted)
- **Aromatherapy:** 1.0% - 3.0% dilution in carrier oil

5.2 Formulation Guidelines

1. **Oil-Based Systems:** Add directly during the cooling phase (<50°C) with thorough stirring.
2. **Water-Based Systems:** Not water-soluble. Use a non-ionic solubilizer (e.g., Polysorbate 20) or encapsulate before adding to lotions, sprays, or aqueous formulations.
3. **Safety Note:** Due to the presence of Myristicin, **do not exceed recommended dosages** in any application. Avoid use in products for children or pregnant women without professional assessment.

6. Packaging & Storage

- **Packaging:** 100mL/500mL amber glass bottles; 5kg/20kg amber glass drums; 180kg stainless steel drums (nitrogen-flushed).
- **Storage:** Store in a **cool, dark, well-ventilated warehouse** at 5-25°C. Keep containers tightly sealed to prevent oxidation and evaporation.
- **Shelf Life:** 24 months (unopened, original packaging); 6 months after opening (store under nitrogen).
- **Transport:** Classified as a **Flammable Liquid (Class 3)**. Transport in compliance with all applicable regulations for flammable goods.

7. Quality Assurance

- Manufactured in ISO 9001 and GMP certified facilities.
- Each batch is tested for identity, purity, Myristicin content, and microbial load.
- Complies with IFRA restrictions on Myristicin for fragrance use.