

Technical Data Sheet (TDS)

- Eugenol

Revision Date: 26 FEB 2026 **CAS Number:** 97-53-0 **Formula:** C₁₀ H₁₂O₂ **Molecular Weight:** 164.20 g/mol

1. Product Overview

Eugenol is a high-purity aromatic phenol with a **strong, classic clove-like spicy floral odor with warm balsamic undertones**, a core raw material in the fragrance, flavor, cosmetic, pharmaceutical and dental industries. It is the main active component of natural clove oil, and our synthetic Eugenol features ultra-high purity (≥99.0%), consistent odor and excellent stability. Supplied with BHT antioxidant to prevent oxidation, color darkening and odor degradation, it complies with international IFRA, FDA and EU REACH regulations. It is widely used as a fragrance core material, food flavor enhancer, dental antiseptic, cosmetic additive and pharmaceutical intermediate, renowned for its unique spicy floral aroma and biological activity.

Core Characteristics: Ultra-high purity (≥99.0%); authentic clove-like spicy floral odor; natural biological activity (antiseptic, antibacterial); supplied with antioxidant for stability; multi-industry applicability; compliant with global regulatory standards (including dental medical use).

2. Technical Specifications (Complies with IFRA/Food/Cosmetic/Pharmaceutical Industrial Standards)

Item	Specification	Test Method
Appearance	Colorless to pale yellow clear liquid	Visual Inspection
Assay (Purity)	≥ 99.0% (w/w)	Gas Chromatography (GC)
Odor	Characteristic clove-like spicy floral odor	Sensory Evaluation (IFRA Method)
Relative Density (20/20°C)	1.062-1.068 g/cm ³	Hydrometer Method
Refractive Index (20°C)	1.538-1.544	- Abbe Refractometer
Boiling Point	253-255°C	Distillation Method
Flash Point (Closed Cup)	≥ 110°C	Pensky-Martens Method
Water Content	≤ 0.1% (w/w)	Karl Fischer Titration
Acid Value (as KOH)	≤ 0.5 mg/g	KOH Titration
Heavy Metals (Pb)	≤ 5 ppm	Atomic Absorption Spectrometry (AAS)
Residue on Evaporation	≤ 0.1% (w/w)	Gravimetric Method
Viscosity (25°C)	6-8 mPa·s	Rotational Viscometer
Antioxidant Content	BHT 0.05-0.1% (w/w, optional)	GC
Solubility	Slightly soluble in water; miscible with ethanol, ether, essential oils and vegetable oils	Shake Flask Method
Antibacterial Activity (E. coli)	Inhibition rate ≥ 90%	Agar Diffusion Method

3. Product Advantages

- Iconic Aroma Profile:** Strong clove-like spicy floral note with warm balsamic undertones, a classic ingredient for oriental, spicy, floral and food flavor formulations; long-lasting scent retention (24-48h in finished products).



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
Email:marketing01@newayphc.com; Phone:+86-021-50350029 <https://www.newayphc.com>

2. **Ultra-High Purity & Stability:** Assay $\geq 99.0\%$, no impurity off-flavors/odors; supplied with BHT antioxidant to prevent oxidation, color darkening and odor degradation; consistent physical and sensory properties across batches.

4. Application Fields

- **Fine Fragrances:** Core material for oriental, spicy, floral, woody and balsamic fragrance profiles (perfumes, eau de toilette, cologne); acts as a middle/base note and fragrance fixative to enhance scent layering and longevity.
- **Functional Fragrances:** Air fresheners, candles, incense, car fresheners; adds classic clove spicy note to daily fragrance products, suitable for indoor and personal use.
- **Household Product Fragrances:** Dish soap, laundry detergent, fabric softener; spicy floral scent with long-lasting effect, popular in home care products.

5. Usage Methods & Dosage

5.1 Recommended Dosage (w/w, adjust based on formulation type; IFRA/FDA compliant)

Application Field	Dosage Range	Key Function
Fine Fragrances (Perfume/EDT)	1.0-6.0%	Core material, middle/base note, fragrance fixative
Cosmetic Formulations	0.05-0.2%	Antibacterial additive, spicy floral scent (IFRA limit)
Household Product Fragrances	0.1-1.0%	Spicy floral fragrance raw material
Food Flavoring	0.001-0.05%	Clove/spicy flavor enhancer, natural preservative
Oral Care Products	0.05-0.3%	Clove flavor, antibacterial, breath freshening
Dental Medical Formulations	5.0-20.0%	Antiseptic, analgesic, antibacterial
Pharmaceutical/Fine Chemical Synthesis	10.0-70.0%	Key intermediate

5.2 Formulation Notes

- **Fragrance/Cosmetic Formulations:** Mix with other ingredients **at room temperature**; avoid heating above 80°C (may cause oxidation/odor degradation). Dilute strictly per IFRA limits to prevent skin/eye irritation and sensitization.
- **Water-Based Formulations:** Slightly soluble in water – use solubilizers (e.g., propylene glycol, polysorbate 80) to improve dispersion and stability in water-based systems.
- **Food/Oral Care Formulations:** Use only food/grade Eugenol; strictly control dosage in accordance with national food additive standards (GB 2760/FDA); avoid mixing with strong acids/bases.

6. Packaging & Storage

- 1 L / 5 L Sealed dark glass bottles (laboratory/small-scale fragrance/flavor/medical use, with BHT antioxidant);
- 25 L HDPE plastic drums (industrial/cosmetic use, opaque, with BHT antioxidant);
- 200 L stainless steel drums (bulk industrial/synthesis use, with BHT antioxidant);
- **Custom packaging** (100 mL-1000 L) available upon request (food/pharmaceutical-grade packaging, antioxidant-free option for medical/synthesis use).

7. Safety & Handling

- The product is a skin/eye irritant, skin sensitizer and combustible liquid; has mild antibacterial effect on human skin/mucosa; avoid undiluted eye/skin contact and large-quantity inhalation.
- **Routine Handling:** Wear nitrile rubber gloves and chemical safety goggles (mandatory); operate in a well-ventilated area; wash hands thoroughly with soap and water after use.
- **Large-Scale Handling:** Wear a lab coat/protective clothing and a half-face respirator with organic vapor cartridge; use local exhaust ventilation to reduce vapor concentration; avoid splash and aerosol generation.