

Technical Data Sheet (TDS)

Issue Date: 28 FEB 2026 Version: V1.0

1. Product Overview

- **Product Name:** Ethyl Decanoate
- **Chemical Name:** Decanoic acid ethyl ester; Ethyl caprate
- **CAS Number:** 110-38-3
- **Molecular Formula:** C₁₂H₂₄O₂
- **Molecular Weight:** 200.32 g/mol
- **Product Trait:** Colorless clear liquid with characteristic fruity (orange/citrus)-waxy mild fatty aromatic odor; combustible liquid (Category 4); mild skin/eye irritation only in sensitive individuals; high purity, excellent flavor/fragrance retention, very low volatility; insoluble in water, miscible with most organic solvents, vegetable and mineral oils. **FOR FOOD FLAVOR, FRAGRANCE, COSMETIC, INDUSTRIAL PLASTICIZER AND ORGANIC SYNTHESIS USE ONLY.**
- **Core Properties:** High purity (≥98.0%, food/fragrance grade ≥99.0%); authentic fruity-waxy flavor/fragrance with long-lasting effect; stable under normal storage/use conditions; compliant with global food/fragrance/cosmetic standards (GB 2760, FDA GRAS, IFRA); excellent compatibility with most food/fragrance/industrial raw materials; very low volatility reduces flavor/fragrance loss in formulations; good plasticizing and lubricating properties for industrial use.
- **Main Application:** Food flavor ingredient (fruit, dairy, baked food flavor formulation); fragrance/cosmetic raw material (perfume, skin care, hair care products); industrial plasticizer for PVC and synthetic resins; lubricant additive for metal processing; organic synthesis intermediate for fine chemicals.

2. Technical Specifications (Food/Fragrance/Cosmetic/Industrial Grade)

Item	Specification (Industrial Grade)	Specification (Food/Fragrance/Cosmetic Grade)
Appearance	Colorless to pale yellow clear liquid	Colorless clear liquid
Assay (Ethyl Decanoate)	≥98.0% (GC)	≥99.0% (GC)
Boiling Point	243-247°C	244-246°C
Refractive Index (n ₂₀ ²⁰ /D)	1.4250-1.4290	1.4260-1.4280
Relative Density (20/20°C)	0.865-0.869	0.866-0.868
Flash Point (Closed Cup)	≥100°C	108±1°C
Water Content	≤0.1%	≤0.05% (Karl Fischer)
Residue on Ignition	≤0.1%	≤0.05%
Heavy Metals (Pb)	≤5 ppm	≤1 ppm (AAS)
Heavy Metals (As)	≤1 ppm	≤0.5 ppm (AFS)
Ethanol Solubility	Miscible (1:20 in 95% ethanol), clear	Miscible (1:30 in 95% ethanol), clear
Odor/Flavor	Fruity-waxy odor, no off-flavor	Pure fruity (orange) -waxy flavor/odor, no off-flavor
Stability	Stable at 0-40°C	Stable at 0-50°C (flavor/fragrance retention ≥98%)
pH Value (25°C)	6.9-7.3	7.0±0.1
Viscosity (25°C)	3.0-4.0 mPa·s	3.3-3.7 mPa·s

3. Product Advantages

- High Purity & Premium Flavor/Fragrance:** Assay $\geq 98.0\%$ (food/fragrance grade $\geq 99.0\%$) with ultra-low impurities and heavy metals; authentic orange/citrus fruity-waxy flavor/odor, no synthetic off-flavor; FDA GRAS certified for food use, IFRA compliant for fragrance/cosmetic use, ideal for high-end food flavor and perfume formulation.
- Excellent Retention & Stability:** Very low volatility and high thermal stability; flavor/fragrance retention $\geq 98\%$ at 50°C ; acts as an effective flavor/fragrance fixative to prolong the duration (8-24 hours) in food and cosmetic formulations; stable in pH 5.0-8.5 for 12 months with no degradation.

4. Application Fields & Dosage Guide

4.1 Main Application Fields

- Food Industry:** Flavor for candy, beverage, ice cream, dairy products, baked food, snack food and seasoning; core raw material for orange/citrus, fruity and creamy flavor formulation; flavor enhancer for fat-containing food.
- Fragrance & Cosmetic Industry:** Perfume raw material for eau de toilette, cologne and body spray; fragrance for skin care creams, lotions, shampoos and body washes; fragrance fixative for high-end cosmetic and perfume formulations.

4.2 Recommended Dosage (w/w in formulation, adjust by effect intensity)

Application Field	Dosage (Industrial Grade)	Dosage (Food/Fragrance/Cosmetic Grade)	Remarks
Food - Candy/Beverage/Dairy	0.02-0.3%	0.01-0.2%	Add at low temperature ($<80^{\circ}\text{C}$) to avoid flavor loss
Fragrance - Perfume/Cosmetic	0.5-6%	0.3-4%	Mix with fragrance oil system; acts as fixative
Plastic Industry - PVC/Resin	2-8%	—	Mix with resin before extrusion/molding; adjust by flexibility demand
Lubricant Industry - Metal Processing Oil	1-5%	—	Blend with base oil; improve lubrication performance
Organic Synthesis - Fine Chemicals	10-99%	50-99%	Depending on reaction type; inert gas protection optional

5. Usage & Formulation Guidelines

- Food Formulation (Orange Flavored Soda):** Dissolve Ethyl Decanoate (0.01-0.2%) in ethanol (1:10); add to syrup system and stir evenly; mix with carbonated water; avoid high-temperature sterilization ($>80^{\circ}\text{C}$).
- Fragrance Formulation (Citrus Perfume):** Add Ethyl Decanoate (0.3-4%) to fragrance oil system (including orange oil, lemon oil, bergamot oil); stir evenly at room temperature; age for 7-14 days in cool dark place for fragrance fusion.

6. Packaging & Storage

- 500mL/1L Amber glass bottle:** Food/Fragrance/Cosmetic lab/R&D/small-batch use, sealed with anti-static screw cap + plastic plug
- 5L/10L HDPE plastic drum:** Cosmetic/Industrial medium-batch use, inner anti-static lining + double anti-leakage cap
- 25L HDPE plastic drum/amber glass drum:** Food/Plastic/Lubricant bulk use, anti-static + nitrogen-filled packaging (for long-term storage)
- 200L Seamless steel drum:** Large-scale industrial synthesis use, anti-static lining + explosion-proof cap

7. Safety & Protection

- The product is a **Class 3 flammable liquid** with mild skin/eye irritation only in sensitive individuals; all operations must be conducted by trained professional personnel with specified PPE (chemical-resistant goggles, nitrile rubber gloves, chemical-resistant apron, organic vapor respirator).
- Operate in a well-ventilated and explosion-proof area with local exhaust ventilation; install vapor concentration detection alarm (set alarm limit at 25 ppm); keep emergency eye wash station and safety shower within 10 meters of the work area.