

Technical Data Sheet (TDS)

Issue Date: 25 FEB 2026 Version: V1.0

1. Product Overview

- **Product Name:** Ethyl Oleate
- **Chemical Name:** (Z)-9-Octadecenoic acid ethyl ester; Oleic acid ethyl ester
- **CAS Number:** 111-62-6
- **Molecular Formula:** C₂₀ H₃₈ O₂
- **Molecular Weight:** 310.51 g/mol
- **Product Trait:** Pale yellow clear oily liquid with characteristic mild fatty ester/vegetable oil-like odor; Class 4 combustible liquid/Class 9 environmentally hazardous substance; mild skin/eye irritation only in sensitive individuals with prolonged contact; high purity, excellent emollient/moisturizing properties, extremely low volatility; insoluble in water, miscible with most organic solvents, vegetable and mineral oils. **FOR FOOD ADDITIVE, COSMETIC, PHARMACEUTICAL, INDUSTRIAL LUBRICANT AND PLASTICIZER USE ONLY.**
- **Core Properties:** High purity (≥98.0%, food/cosmetic grade ≥99.0%); excellent emollient, moisturizing and softening properties; good emulsifying and plasticizing performance; stable under normal storage/use conditions; compliant with global food/cosmetic/pharmaceutical standards (GB 2760, FDA GRAS); excellent compatibility with most food/cosmetic/pharmaceutical/industrial raw materials; extremely low volatility ensures long-lasting effect in formulations.
- **Main Application:** Food additive (emulsifier, plasticizer, lubricant); cosmetic raw material (emollient, moisturizer, skin softener); pharmaceutical excipient (solubilizer, lubricant for tablets/capsules); industrial lubricant (metal processing, textile softener); plasticizer for polymers (PVC, PE, PP); leather conditioner and textile finishing agent.

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

Item	Specification (Industrial Grade)	Specification (Food/Cosmetic/Pharm Grade)
Appearance	Pale yellow to light amber clear oily liquid	Pale yellow clear oily liquid
Assay (Ethyl Oleate)	≥98.0% (GC)	≥99.0% (GC)
Boiling Point	205-210°C (10 mmHg)	207-209°C (10 mmHg)
Refractive Index (n ₂₀ ^D)	1.4420-1.4480	1.4440-1.4460
Relative Density (20/20°C)	0.865-0.875	0.868-0.872
Flash Point (Closed Cup)	≥180°C	186±2°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)
Iodine Value	75-85 g I ₂ /100g	78-82 g I ₂ /100g (Wijs Method)
Saponification Value	175-185 mg KOH/g	178-182 mg KOH/g (Titration)
Solubility	Miscible with ethanol/ether/vegetable oil, clear	Miscible with food grade ethanol/vegetable oil, clear
Odor	Mild fatty ester odor, no off-flavor	Pure mild fatty ester odor, no off-flavor
Stability	Stable at 0-40°C	Stable at 0-50°C (performance retention ≥98%)
pH Value (25°C, 1% emulsion)	6.8-7.4	7.0±0.2
Viscosity (25°C)	6.0-8.0 mPa·s	6.5-7.5 mPa·s

3. Product Advantages

- High Purity & Multi-Grade Compliance:** Assay $\geq 98.0\%$ (food/cosmetic/pharm grade $\geq 99.0\%$) with ultra-low impurities and heavy metals; meets food additive (GB 2760/FDA GRAS), cosmetic and pharmaceutical excipient standards; suitable for high-end food, cosmetic and pharmaceutical formulation.
- Excellent Functional Performance:** Superior emollient and moisturizing effect for cosmetic formulations (penetrates skin easily, no greasy residue); good emulsifying and plasticizing properties for food and polymer processing; excellent lubricating performance for industrial and pharmaceutical use (reduces friction, improves processability).
- Outstanding Stability & Retention:** Extremely low volatility and high thermal stability; performance retention $\geq 98\%$ at 50°C ; stable in pH 5.0-9.0 formulations for 12 months with no degradation; no crystallization at low temperature ($> -32^{\circ}\text{C}$), suitable for all climate conditions.

4. Application Fields & Dosage Guide

4.1 Main Application Fields

- Food Industry:** Emulsifier/plasticizer for bakery, confectionery, dairy products and processed meat; lubricant for food processing equipment; anti-sticking agent for candy and tablet food; improves texture and mouthfeel of fat-containing food.

4.2 Recommended Dosage (w/w in formulation, adjust by function demand)

Application Field	Dosage (Industrial Grade)	Dosage (Food/Cosmetic/Pharm Grade)	Remarks
Food - Bakery/Confectionery/Dairy	0.5-3%	0.2-2%	Food grade only; improve texture and emulsification
Cosmetic - Skin Care/Hair Care	2-8%	1-6%	Mix in oil phase; improve emollient/moisturizing effect
Pharmaceutical - Tablets/Capsules/Ointment	1-5%	0.5-4%	Pharm grade only; lubricant/solubilizer/excipient
Industrial - Metal Lubricant	5-15%	—	Blend with base oil; improve lubrication performance
Industrial - Polymer Plasticizer	3-10%	—	Mix with resin before extrusion/molding
Textile/Leather - Softener/Conditioner	2-8%	—	Dilute 1:100 and apply to fabric/leather

5. Usage & Formulation Guidelines

- Food Formulation (Creamy Candy):** Melt sugar and fat at $70-80^{\circ}\text{C}$; add food grade Ethyl Oleate (0.2-2%) and stir evenly; add milk powder and other raw materials; cool and form; improves texture and anti-sticking performance.
- Cosmetic Formulation (Moisturizing Cream):** Add cosmetic grade Ethyl Oleate (1-6%) to oil phase (jojoba oil + shea butter) and melt at $60-70^{\circ}\text{C}$; mix with aqueous phase (glycerol + hyaluronic acid) under homogenization (3000 rpm); cool to 30°C and add fragrance; improves emollient effect and spreadability.

6. Packaging & Storage

- 500mL/1L Amber glass bottle:** Food/Cosmetic/Pharm 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/Pharm/Industrial bulk use, anti-static + nitrogen-filled packaging (for long-term storage)

7. Safety & Protection

- The product is a **Class 4 combustible liquid/Class 9 environmentally hazardous substance** with mild skin/eye irritation only in sensitive individuals with prolonged contact; all operations must be conducted by trained professional personnel with specified PPE (chemical-resistant goggles, nitrile rubber gloves, chemical-resistant apron, organic vapor respirator for high temperature).