

Technical Data Sheet (TDS)

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1. Product Overview

- **Product Name:** Cyclopentanone
- **CAS Number:** 120-92-3
- **Molecular Formula:** C₅ H₈ O
- **Molecular Weight:** 84.12 g/mol
- **Chemical Source:** Synthetic organic chemical (produced by the catalytic hydrogenation and cyclization of adipic acid, or the dehydrogenation of cyclopentanol; purified by precision distillation and filtration to achieve high purity ≥99.5%; low water content and impurity content, meeting industrial/pharmaceutical grade requirements).
- **Product Trait:** Colorless transparent liquid with mild ketone-like odor; flammable liquid, miscible with water and most organic solvents; excellent solvency for resins, polymers and organic compounds; stable under normal storage and processing conditions, acts as a key intermediate for organic synthesis with high reactivity of ketone group; meets industrial organic intermediate and solvent environmental and safety standards.
- **Core Properties: High-purity industrial organic intermediate and solvent** with excellent solvency, good water miscibility, high chemical reactivity and moderate volatility; compatible with acrylic, epoxy, polyurethane and alkyd resins; ideal for organic synthesis, pharmaceutical manufacturing and coating/ink formulation; high purity (≥99.5%) with low heavy metal and impurity content; stable under recommended storage conditions.
- **Main Application:** Organic synthesis intermediate for pharmaceuticals, pesticides and flavors; solvent for resins, coatings, inks and adhesives; pharmaceutical raw material for anti-inflammatory and cardiovascular drugs; flavor and fragrance intermediate for food and daily chemical products; rubber processing aid and plasticizer intermediate.

2. Technical Specifications (Industrial Grade, Complies with GB/T/ACGIH Standards)

表格

Item	Specification
Appearance	Colorless transparent liquid
Assay (Cyclopentanone)	≥ 99.5%
Water Content	≤ 0.1%
Density (25°C)	0.946-0.950 g/cm ³
Refractive Index (20°C)	1.433-1.435
Boiling Range (760mmHg)	128-131°C
Flash Point (Closed Cup)	31°C
Acidity (as CH ₃ COOH)	≤ 0.005%
Evaporation Residue	≤ 0.005%
Heavy Metals (Pb)	≤ 2 ppm
Heavy Metals (As)	≤ 1 ppm
pH Value (25°C)	6.0-7.0
Viscosity (25°C)	0.9 mPa·s
Solubility	Miscible with water and most organic solvents
Autoignition Temperature	450°C
Flammability Limits (v/v)	1.1% - 9.8%

3. Product Advantages

1. **High Purity & Purity Stability:** Purity ≥99.5%, low water content (≤0.1%) and evaporation residue (≤0.005%); ultralow heavy metal content (Pb ≤2 ppm, As ≤1 ppm); batch-to-batch purity consistency (CV ≤0.2%), ensuring stable synthesis and formulation effects.
2. **Excellent Solvency:** Strong dissolving power for acrylic, epoxy, polyurethane, alkyd and polyester resins; suitable for various coating, ink and adhesive formulations, improving product film-forming property and gloss; also dissolves most organic synthesis raw materials.

3. **Good Water Miscibility:** Miscible with water in any proportion; ideal for water-based coating/ink formulations as a cosolvent, no phase separation; suitable for aqueous phase organic synthesis reactions.
4. **High Chemical Reactivity:** Active ketone functional group enables various organic reactions (reduction, condensation, halogenation, addition); serves as a key intermediate for pharmaceuticals, pesticides and flavors, with high reaction conversion rate.
5. **Moderate Volatility:** Moderate vapor pressure and evaporation rate; reduces solvent loss and VOC emission during processing for coating/ink use; easy to control reaction conditions for organic synthesis use.
6. **Wide Application Range:** Can be used as organic synthesis intermediate, solvent, pharmaceutical raw material and flavor intermediate; one product for multiple industrial uses, reducing production and procurement costs.

4. Application Fields

4.1 Organic Synthesis Industry

- Intermediate for the synthesis of cyclopentanol, cyclopentylamine and halogenated cyclopentane; key raw material for heterocyclic compound synthesis; used in the preparation of fine chemicals such as plasticizers and surfactants.

4.2 Pharmaceutical Manufacturing

- Raw material for the production of anti-inflammatory drugs, cardiovascular drugs and central nervous system drugs; intermediate for antibiotic synthesis; meets pharmaceutical grade purity requirements with customized purification.

4.3 Coatings & Inks Industry

- Solvent and cosolvent for solvent-based/water-based coatings, industrial inks and gravure printing inks; improves film-forming property, adhesion and gloss of coatings/inks; reduces surface tension of formulations.

5. Usage & Formulation Guidelines

5.1 Recommended Dosage (Industrial Application)

Application Field	Dosage (w/w)
Organic Synthesis (intermediate)	30-80%
Coatings/Inks (solvent/cosolvent)	5-20%
Pharmaceutical Manufacturing (raw material)	20-60%
Flavor Synthesis (intermediate)	10-30%
Rubber Processing Aid	1-5%

6. Packaging & Storage

6.1 Packaging Specifications (Industrial Grade, Anti-Leakage & Anti-Static)

- 500 mL Amber glass bottle (laboratory/R&D/small-batch use, light protection + anti-static)
- 5 L HDPE plastic drum (medium-batch production use, anti-leakage + anti-static)
- 25 L HDPE plastic drum (bulk production use, anti-leakage + anti-static + explosion-proof)
- 1000 L IBC tote (large-scale industrial use, anti-static valve + dust-free port, HDPE inner tank)
- Custom packaging (1 L/2 L) available for R&D and small-batch formulation needs (all **anti-leakage + anti-static**); pharmaceutical grade available in amber glass ampoules.

7. Safety & Protection

- The product is a Class 3 flammable liquid with mild skin/eye/respiratory irritation and mild central nervous system effects; **all operations must be conducted by trained professional personnel** with full specified PPE (half-face organic vapor respirator, chemical-resistant safety goggles, nitrile rubber gloves $\geq 0.20\text{mm}$, flame-retardant lab coat, anti-static shoes and chemical-resistant apron).
- Operate in a well-ventilated fume hood with local exhaust ventilation; eliminate all ignition sources and prevent static electricity; avoid generating vapor or mist; do not inhale vapor or contact with skin/eyes for a long time; no eating/drinking/smoking in the work area.