



TECHNICAL DATA SHEET

DIETHYL PHTHALATE — DEP

1. PRODUCT IDENTIFICATION

Product Name:
Diethyl Phthalate

Product Abbreviation:
DEP

Chemical Name:
Diethyl Phthalate

IUPAC Name:
Diethyl benzene-1,2-dicarboxylate

Synonyms:

- Phthalic Acid Diethyl Ester
- Diethyl Ester of Phthalic Acid
- Ethyl Phthalate
- Diethyl o-Phthalate
- DEP Solvent

CAS Number:
84-66-2

EC Number:
201-550-6

Chemical Formula:
 $C_{12}H_{14}O_4$

Molecular Weight:
222.24 g/mol

Chemical Family:
Phthalate Ester

**Product Type:**

Industrial solvent, plasticizer, carrier, and formulation additive

2. PRODUCT DESCRIPTION

BASEKIM Diethyl Phthalate is a clear, colorless to water-white oily liquid with a mild aromatic odor.

DEP combines good solvency, chemical stability, low volatility, and compatibility with many organic compounds. Its slow and controlled evaporation makes it suitable for applications requiring prolonged solvent retention, fragrance stabilization, plasticization, or uniform distribution of formulation ingredients.

The product is only slightly soluble in water but is soluble in many common organic solvents.

3. PRINCIPAL APPLICATIONS

Diethyl Phthalate is commonly used in:

- Fragrance and perfume formulations
- Fragrance fixation and stabilization
- Personal-care formulations, subject to applicable regulations
- Industrial solvent systems
- Plastic and polymer processing
- Cellulose-based formulations
- Coatings and resins
- Adhesives and sealants
- Printing and specialty inks
- Chemical intermediates
- Specialty chemical formulations
- Insect-repellent formulations, where legally permitted
- Pharmaceutical coating and processing applications, subject to grade approval
- Industrial manufacturing processes requiring controlled evaporation

Suitability must be evaluated in the customer's final formulation and intended market.



4. FUNCTIONAL CHARACTERISTICS

BASEKIM Diethyl Phthalate offers:

- Good solvency for many organic ingredients
- Low volatility at ambient temperature
- Controlled evaporation
- Mild odor
- Good chemical stability
- Good formulation compatibility
- Plasticizing performance
- Fragrance-carrying capability
- Improved distribution of formulation components
- Clear and colorless appearance
- Low water solubility
- High boiling point

5. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

The following values are typical reference values and do not constitute guaranteed sales specifications.

Property	Typical Value
Appearance	Clear, colorless to water-white oily liquid
Odor	Mild, slightly aromatic
Chemical formula	$C_{12}H_{14}O_4$
Molecular weight	222.24 g/mol
Relative density at 20°C	Approximately 1.11–1.12
Boiling point	Approximately 295–298°C
Freezing point	Approximately –41°C
Flash point, open cup	Approximately 160–161°C
Vapor pressure at 25°C	Approximately 0.002 mmHg
Vapor density	Approximately 7.7; air = 1
Water solubility at 25°C	Approximately 0.1 wt.%
Solubility in organic solvents	Soluble in alcohol, ether, and many organic solvents
Dynamic viscosity at 20–25°C	Approximately 11–14 mPa·s



Property	Typical Value
Refractive index at 20°C	Approximately 1.500
Log Kow	Approximately 2.4–2.5
Auto-ignition temperature	Approximately 450–460°C
Evaporation rate	Very low
Acidity	Low; grade dependent
Color	Water-white to pale yellow
Non-volatile content	Approximately 100%
pH	Not applicable

6. PROVISIONAL COMMERCIAL SPECIFICATION

The following specification is proposed for an industrial-grade DEP product and must be verified against BASEKIM's approved supplier specification before contractual use.

Test Parameter	Provisional Specification	Suggested Test Method
Appearance	Clear, transparent liquid; free from visible impurities	Visual
Diethyl Phthalate purity	≥99.0 wt. %	Gas chromatography
Color	≤30 APHA	ASTM D1209 or equivalent
Relative density at 20°C	1.110–1.125	ASTM D4052 or equivalent
Refractive index at 20°C	1.500–1.505	ASTM D1218 or equivalent
Water content	≤0.20 wt. %	ASTM E203 or ASTM D6304
Acidity, as phthalic acid	≤0.10 wt. %	Titration
Ester value	Grade dependent; to be agreed	Titration
Flash point	≥150°C, method dependent	ASTM D92 or equivalent
Heating loss	≤0.30 wt. %	Gravimetric method
Residue or suspended matter	None visible	Visual
Odor	Mild and characteristic	Organoleptic
Specific impurities	To be agreed	Gas chromatography



Only the contractual specification and batch Certificate of Analysis determine product conformity.

7. PERFORMANCE IN FRAGRANCE APPLICATIONS

DEP may function as:

- A fragrance solvent
- A fragrance carrier
- A fixative
- A diluent
- A volatility-control component

Its low vapor pressure can reduce the rapid evaporation of more volatile fragrance components and support more uniform fragrance distribution.

Performance depends on:

- Fragrance composition
- DEP concentration
- Temperature
- Packaging
- Substrate
- Other formulation ingredients

Cosmetic or personal-care use requires confirmation of the product grade, purity, applicable legislation, and customer formulation requirements.

8. PERFORMANCE IN POLYMER AND PLASTIC APPLICATIONS

DEP can act as a secondary plasticizer or process aid in selected polymer and cellulose-based systems.

Potential benefits include:

- Increased flexibility
- Improved workability
- Reduced brittleness
- Improved ingredient dispersion



- Modification of film properties
- Improved processing behavior

Compatibility, migration, volatility, and mechanical-property testing must be completed in the intended polymer system before commercial use.

DEP may not be suitable for every polymer or regulated end use.

9. PERFORMANCE IN COATINGS, RESINS, AND ADHESIVES

In coatings, resin systems, and adhesives, DEP may provide:

- Controlled solvent evaporation
- Resin and additive solvency
- Improved ingredient distribution
- Viscosity modification
- Film flexibility
- Improved formulation consistency
- Reduced premature drying during processing

Laboratory compatibility and application testing are recommended before production-scale use.

10. FORMULATION GUIDANCE

The appropriate dosage depends on:

- Intended function
- Required solvency
- Desired evaporation profile
- Polymer or resin type
- Fragrance concentration
- Regulatory limits
- Finished-product performance requirements

DEP should be incorporated gradually under controlled mixing.

Recommended formulation checks include:



- Clarity
- Phase stability
- Viscosity
- Odor
- Color
- Drying time
- Film properties
- Plasticization efficiency
- Migration
- Ingredient compatibility
- Accelerated storage stability
- Finished-product regulatory compliance

No universal dosage can be recommended for all applications.

11. MATERIAL COMPATIBILITY

Potentially suitable storage and transfer materials include:

- Stainless steel
- Carbon steel
- Glass
- Approved high-density polyethylene
- Compatible lined containers

Compatibility must be verified for:

- Gaskets
- Seals
- Pumps
- Hoses
- Tank coatings
- Elastomers
- Plastics
- Finished-product packaging

Prolonged contact may soften or affect some plastics, rubbers, coatings, and adhesives.



12. PACKAGING

Available or proposed packaging may include:

- Steel drums
- Plastic drums
- Intermediate bulk containers
- ISO tanks
- Road tankers
- Customer-specific bulk packaging

Packaging must be:

- Chemically compatible
- Tightly sealed
- Clean and dry
- Properly labeled
- Suitable for the intended transport method
- Protected from contamination and physical damage

Actual package size and net weight must be confirmed in the sales contract.

13. STORAGE

Store the product:

- In tightly closed containers
- In a cool, dry, well-ventilated location
- Away from excessive heat
- Away from direct sunlight
- Away from strong oxidizing agents
- Away from strong acids
- Away from food and animal feed
- In compatible storage equipment
- Under conditions that prevent contamination

Keep containers upright.

Use secondary containment for bulk storage.



Avoid prolonged exposure to moisture and open air.

14. HANDLING

Use good industrial hygiene practices.

During handling:

- Avoid eye and prolonged skin contact.
- Avoid breathing mist or heated vapor.
- Use adequate ventilation.
- Wear suitable protective gloves and eye protection.
- Keep containers closed when not in use.
- Prevent spills and leaks.
- Use appropriate pumps and transfer equipment.
- Do not eat, drink, or smoke in handling areas.
- Wash thoroughly after handling.
- Consult the current Safety Data Sheet before use.

Spilled liquid may create a slipping hazard and should be cleaned promptly.

15. TRANSPORT INFORMATION

High-purity Diethyl Phthalate is generally not regulated as dangerous goods under standard international transport rules.

Regulation	Typical Status
ADR/RID	Not regulated
IMDG	Not regulated
ICAO/IATA	Not regulated
UN number	Not assigned
Packing group	Not applicable
Marine pollutant	Generally not classified

The transport status must be verified for:

- The exact product composition



- Package type
- Shipment quantity
- Destination country
- Applicable current regulations

16. SHELF LIFE

Diethyl Phthalate is chemically stable when stored in sealed, compatible containers under recommended conditions.

Proposed Retest Period:

24 months from the date of manufacture or filling.

This period is provisional and must be approved by the manufacturer's quality department.

Product should be retested before use when:

- The container has been opened for an extended period.
- The product has been exposed to moisture or contamination.
- Storage conditions have exceeded the recommended range.
- Appearance, color, or odor has changed.
- The assigned retest date has passed.

17. QUALITY CONTROL

Recommended batch tests include:

- Appearance
- Purity by gas chromatography
- Color
- Relative density
- Refractive index
- Water content
- Acidity
- Flash point
- Heating loss
- Specific impurity profile
- Odor



- Visible contamination

A Certificate of Analysis should be issued for each batch or shipment where contractually required.

18. REGULATORY CONSIDERATIONS

The regulatory acceptability of DEP depends on:

- Destination country
- Product purity
- Intended application
- Cosmetic regulations
- Pharmaceutical regulations
- Food-contact requirements
- Medical-device regulations
- Toy and children's-product restrictions
- Environmental regulations
- Customer-specific restricted-substance requirements

Industrial-grade material must not be represented as cosmetic, pharmaceutical, or food-contact grade unless it has been manufactured, tested, documented, and approved for that use.

Customers are responsible for determining the product's regulatory suitability in their finished products.

19. SAFETY SUMMARY

Diethyl Phthalate has low volatility and is difficult to ignite at ordinary ambient temperatures, but it is combustible when strongly heated.

Recommended precautions include:

- Avoid eye contact.
- Minimize prolonged skin exposure.
- Avoid breathing mist or heated vapor.
- Use ventilation where mist or heat is present.
- Keep away from strong oxidizing agents.
- Prevent environmental release.



- Clean spills promptly.
- Wear suitable personal protective equipment.

Refer to the current Material Safety Data Sheet for complete health, safety, environmental, and disposal information.

20. DOCUMENT CONTROL

Document Title:

Technical Data Sheet — Diethyl Phthalate

Product Abbreviation:

DEP

Revision Number:

1.0 Draft

Issue Date:

To be assigned

Supersedes:

New document

Prepared For:

BASEKIM

Prepared By:

Technical / Quality Department

Approved By:

To be assigned

21. MANUFACTURER VERIFICATION REQUIRED

Before official publication, BASEKIM must confirm:

1. Guaranteed minimum DEP purity.
2. Product grade and approved end uses.
3. Complete impurity profile.



4. Color specification.
5. Density range.
6. Refractive-index range.
7. Water-content limit.
8. Acidity limit.
9. Flash-point method and limit.
10. Heating-loss limit.
11. Approved analytical test methods.
12. Packaging formats and net quantities.
13. Storage temperature.
14. Shelf life or retest period.
15. Regulatory status for cosmetics, pharmaceuticals, food contact, medical devices, toys, and children's products.
16. Country-specific chemical-inventory status.
17. Document number, issue date, approval, and revision history.

22. DISCLAIMER

The information in this Technical Data Sheet is based on publicly available information and typical physical and chemical properties of high-purity Diethyl Phthalate.

Typical values are provided for general technical guidance and are not guaranteed sales specifications.

The provisional specification in Section 6 must not be used contractually until it has been reviewed and approved by BASEKIM and aligned with the actual manufacturer specification.

The buyer is responsible for testing the product in the intended formulation and determining its suitability, safety, and regulatory compliance.

Only the current sales contract, approved product specification, Certificate of Analysis, and Safety Data Sheet govern the supplied product.