

Cyclodextrin series

Product Introduction

Cyclodextrin (CD) refers to a diverse range of cyclic oligosaccharides, derived from amylose and produced with the assistance of cyclodextrin glucosyltransferase enzymes produced by *Bacillus* species. These compounds typically comprise 6 to 12 D-glucopyranose units. Notably, the molecules containing 6, 7 and 8 glucose units, which have garnered significant research attention and practical importance, are individually designated as alpha-, beta- and gamma-cyclodextrin.

Seebio specializes in offering natural cyclodextrins, including α , β and γ -cyclodextrin, beta-cyclodextrin derivatives, as well as cyclodextrin inclusion compounds (intended for use in veterinary drugs and cosmetics).

Product Characteristics

Hydrophilia: The outer edge is hydrophilic and the inner cavity is hydrophobic.

Classification: Anthraquinone organic chemicals

Structure: Polymers are connected end to end by α -1,4- glycosidic bonds.

Stability: Stable in alkaline medium and cleavable in strong acid.

Applications of Cyclodextrin

Cyclodextrin is characterized by a hole in its ring structure, with -CH- oxygen atoms bonded to glucose moieties. These -OH groups at the 2, 3, and 6 positions of glucose are hydrophilic, allowing other molecules to form inclusion compounds through weak van der Waals forces. A diverse range of substances can be encapsulated by cyclodextrin, including rare gases, halogens, dyes, spices, drugs, foods, pesticides, and preservatives. Encapsulation enhances their stability, volatility, solubility, and reactivity. This special function of cyclodextrin makes it an inclusion material with wide applications.

1. Application in the Pharmaceutical Industry: Cyclodextrin can form inclusion complexes with drugs, stabilizing unstable compounds, preventing liquid drugs from deliquescing, adhering, or powdering, and solubilizing insoluble or poorly soluble drugs.
2. Application in the Pesticide Industry: Cyclodextrin-formed inclusions are stable, enabling storage of pesticides and enhancing their insecticidal efficacy.
3. Application in the Food Industry: Cyclodextrin in food products can eliminate or mask unpleasant odors, improve food texture, reduce or eliminate bitter tastes, act as an antioxidant, and preserve and enhance flavor.
4. Application in the Daily Chemical Industry: Cyclodextrin serves as an emulsifier and quality improver in cosmetics, exhibits deodorizing effects (e.g., removing bad breath), and has antimicrobial properties, making it useful in toothpaste and toothpowder production.
5. Application in the Chemical Field: Cyclodextrin is a highly valuable chemical reagent due to its unique properties. It can be used in various chemical reactions, serving as a catalyst or reactant, depending on the specific requirements of the reaction. Additionally, it can be modified to create new derivatives with tailored properties, expanding its application potential in the chemical industry.
6. Other Uses: It can be employed as a treatment agent for oily sewage in environmental protection. When used in aqueous solutions, cyclodextrin can clean oil tanks, and its waste liquid can be recycled to produce fuel oil.

ALPHA CYCLODEXTRIN

Product Name: ALPHA CYCLODEXTRIN

Alternative Name: Alpha-Cyclodextrin; α -cyclodextrin; cyclomaltohexaose; α -CD;

CAS No.: 10016-20-3

Appearance: White powder, odorless and slightly sweet.

Purity: 99%

Mol. Formula: $C_{36}H_{60}O_{30}$

Mol. Weight: 972.84

Grade: oral administration

Quality Standard: USP-NF2022, EP10.3 Enterprise standard

Packing: 25kg/ bag, 1kg/ bag

Storage: store in a well-closed container, protected from light.

BETA CYCLODEXTRIN

Product Name: BETA CYCLODEXTRIN

Alternative Name: Beta cyclodextrin, cycloheptaose, cyclomaltoheptaose;

CAS No.: 7585-39-9

Appearance: White crystal.

Purity: 98%

Mol. Formula: $C_{42}H_{70}O_{35}$

Mol. Weight: 1134.98

Quality Standard: USP-NF2022, ChP2020, EP, Enterprise standard

Packing: 25kg/ bag, 20kg/ box, 1kg/ bag, 0.5kg/ bag.

Storage: Sealed and stored in a dry place.

GAMMA CYCLODEXTRIN

Product Name: γ -Cyclodextrin

CAS No.: 17465-86-0

Appearance: White powder, odorless and slightly sweet

Purity: $\geq 98.0\%$

Mol. Formula: $C_{48}H_{80}O_{40}$

Mol. Weight: 1297.12

Grade: oral administration

Quality Standard: USP-NF2022, ChP2020, EP, enterprise standards

Packing: 20KG/ bag, 1kg/ bag and 0.5kg/ bag.

Storage: Sealed and stored in a dry place.

HYDROXYPROPYL-GAMMA- CYCLODEXTRIN

Product Name: HYDROXYPROPYL-GAMMA- CYCLODEXTRIN (HP- γ -CD)

Alternative Name: HP- γ -CD; Hydroxypropyl- γ -Cyclodextrin;

CAS No.: 128446-34-4

Appearance: White powder, odorless and slightly sweet

Purity: $\geq 98\%$

Mol. Formula: $C_{48}H_{80-n}O_{40} \cdot (C_3H_7O)_n$

Mol. Weight: $1297+58n+58n$

Quality Standard: Enterprise standard

Packing: 20kg/ barrel, 1kg/ bag.

Storage: Sealed and stored in a dry place.

Application of Gamma Cyclodextrin

γ -cyclodextrin has a larger cavity than β -cyclodextrin, so the cavity can contain a wider range of guest molecules. Better water solubility, the solubility of γ -cyclodextrin is 25.6g/100ml at room temperature 25°C, while the solubility of α -cyclodextrin is 12.7g/100ml of water, and the solubility of β -cyclodextrin is only 1.88g/100ml of water. The application prospect is broader than that of β -cyclodextrin.

Use: Carrier; Perfume modifier; Stabilizer.

β -Cyclodextrin derivative series

HYDROXYPROPYL-GAMMA- CYCLODEXTRIN

Product Name: HYDROXYPROPYL-BETA-CYCLODEXTRIN

Alternative Name: 2-hydroxypropyl beta cyclodextrin; Hydroxypropyl β cyclodextrin; Hydroxypropyl- β -cyclodextrin; Hydroxypropyl cyclodextrin

CAS No.: 128446-35-5 (94035-02-6)

Appearance: White or white-like amorphous or crystalline powder

Purity: 99%

Mol. Formula: $C_{42}H_{70-n}O_{35}(C_3H_7O)_n$, where n is degree of substitution

Mol. Weight: $1134+58n$

Grade: Injection and oral administration

Quality Standard: USP-NF2022、EP10.3 Enterprise standard

Packing: 20kg/ box, 20kg/ barrel, 10kg/ barrel, 1kg/ bag, 0.5kg/ bag.

Storage: Store in a well-closed container, protected from light.

BETADEX SULFOBUTYL ETHER SODIUM

Alternative Name: sulfobutyl ether-beta-cyclodextrin sodium salt

Betadex sulfobutyl ether sodium

CAS No.: 182410-00-0

Appearance: White powder

Purity: 99%

Mol. Formula: $C_{42}H_{70-n}O_{35}(C_4H_8SO_3Na)_n$, where n is degree of substitution

Mol. Weight: $1134+158n$

Grade: Injection

Quality Standard: USP-NF2022、EP10.3、Enterprise standard

Packing: 20kg/ barrel, 10kg/ barrel, 1kg/ bag, 500g/ bag.

Storage: Sealed and stored in a dry place.

DIMETHYL BETA CYCLODEXTRIN

Product Name: DIMETHYL BETA CYCLODEXTRIN

Alternative Name: Methyl-Beta-Cyclodextrin; Methyl- β -Cyclodextrin;

CAS No.: 128446-36-6

Appearance: White powder, nontoxic, odorless and slightly sweet.

Mol. Formula: $C_{42}H_{70-n}O_{35} \cdot (CH_3)_n$

Mol. Weight: $1135+n \cdot (14.0)$

Grade: Injection

Quality Standard: Enterprise standard

Packing: 15kg/barrel, 0.5kg/bag.

Storage: Sealed and stored in a dry place.

2,6-DIMETHYL BETA CYCLODEXTRIN

Product Name: 2,6-DIMETHYL BETA CYCLODEXTRIN

CAS No.: 51166-71-3

Appearance: White crystalline powder, nontoxic, odorless and slightly sweet.

Mol. Formula: $C_{56}H_{98}O_{35}$

Mol. Weight: 1331.36

Quality Standard: Enterprise standard

Packing: 6kg/ barrel, 0.25kg/ bag

Storage: Sealed and stored in a dry place.

HYDROXYETHYL BETA CYCLODEXTRIN

Product Name: HYDROXYETHYL BETA CYCLODEXTRIN

CAS No.: 128446-32-2

Alternative Name: 2-Hydroxyethyl)- β -cyclodextrin;

Appearance: White powder, nontoxic, odorless and slightly sweet.

Mol. Formula: $C_{56}H_{98}O_{42}$

Mol. Weight: 1443.35

Quality Standard: Enterprise standard

Packing: 10kg/ barrel, 20kg/ barrel

Storage: Sealed and stored in a dry place.

CARBOXYMETHYL BETA-CYCLODEXTRIN

Product Name: Carboxymethyl beta-cyclodextrin

CAS No.: 218269-34-2

Appearance: White powder.

Mol. Formula: C₅₆H₈₄O₄₉

Mol. Weight: 1541.237

Storage: Sealed and stored in a dry place.

6-O-ALPHA-D-GLUCOSYL BETA CYCLODEXTRIN

Product Name: 6-O-ALPHA-D-GLUCOSYL-BETA-CYCLODEXTRIN

CAS No.: 92517-02-7

Appearance: White powder, nontoxic, odorless and slightly sweet.

Mol. Formula: C₄₈H₈₀O₄₀

Mol. Weight: 1297.125

Quality Standard: Enterprise standard

Packing: 6kg/ barrel, 0.25kg/ bag

Storage: Sealed and stored in a dry place.

PIROXICAM BETA CYCLODEXTRIN

Product Name: PIROXICAM BETA CYCLODEXTRIN

Alternative Name: Piroxicam-β-Cyclodextrin

CAS No.: 96684-39-8

Appearance: Pale yellow powder

Mol. Formula: C₄₂H₇₀O₃₅ . xC₁₅H₁₃N₃O₄S

Mol. Weight: 1466.33

Grade: oral administration

Quality standard: Enterprise standard

Packing: 20kg/box or barrel, 10kg/barrel or box, 1kg/ bag, 0.5kg/ bag.

Storage: Sealed and stored in a dry place.

Application of β-cyclodextrin product series

Solubilizer, wetting agent, chelating agent (complexing agent) and multivalent masking agent.

Sulfobutyl beta-cyclodextrin sodium is a new type of anionic cyclodextrin derivative with high water solubility, which can be well included with drug molecules to form a non-covalent complex, thus improving the stability, water solubility and safety of drugs, reducing nephrotoxicity, alleviating drug hemolysis, controlling drug release rate, and masking bad smell.

At present, it has been applied to injection medicine, oral medicine, nasal medicine and eye medicine, and has special affinity and inclusion for nitrogen-containing drugs.

Cyclodextrin Inclusion Compounds

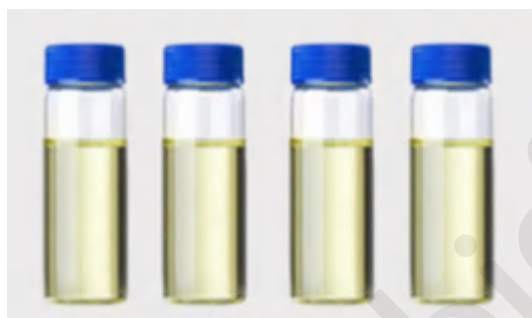
40% HYDROXYPROPYL-BETA-CYCLODEXTRIN AQUEOUS SOLUTION

Product Name: 40% hydroxypropyl- β -cyclodextrin aqueous solution

CAS No.: 128446-35-5

Appearance: Colorless transparent or yellowish liquid

Storage: Keep away from light and keep in a dry place



Applications: 40% hydroxypropyl- β -cyclodextrin aqueous solution is a modified product of beta-cyclodextrin, which is light yellow and transparent in appearance. It can drive away peculiar smell, include many unstable components to make it more stable, not easy to decompose, and make insoluble components soluble. It is widely used in medicine, food, washing and cosmetics, pesticides, printing and dyeing chemicals and other fields. Because the product adopts new technology and is liquid, the cost is reduced, and the price is far lower than that of powdered products.

CINNAMALDEHYDE-CYCLODEXTRIN INCLUSION COMPOUND

Packing: 1kg/ bag, 100g/ bag

Storage: Keep away from light and keep in a dry place

Applications: Using hydroxypropyl- β -cyclodextrin inclusion technology to prepare cinnamaldehyde-hydroxypropyl- β -cyclodextrin inclusion compound can solve the problems of cinnamaldehyde being insoluble in water, volatile and easy to oxidize, and can significantly improve its solubility in water. With the extension of time, cinnamaldehyde, protected by cyclodextrin wall material, has a long-lasting and stable antibacterial effect. Therefore, the inclusion compound has sustained-release antibacterial effect and good water solubility.



CURCUMIN-CYCLODEXTRIN INCLUSION COMPOUND

Appearance: Yellow or Orange powder.

Mol. Formula: C₂₁H₂₀O₆

Packing: 1kg/ bag, 100g/ bag

Storage: Keep away from light and keep in a dry place

Applications: CURcumin (Cur) is a fat-soluble substance, which is hardly soluble in water. Its low solubility and bioavailability in water hinder its application. Therefore, in order to improve the solubility and bioavailability of curcumin (CUR), cyclodextrin inclusion compound was prepared by using cyclodextrin inclusion technology, which has the advantages of low raw material cost, high biological safety and simple preparation method.



Product List

Product Name	Grade
ALPHA CYCLODEXTRIN	oral administration
BETA CYCLODEXTRIN	/
GAMMA CYCLODEXTRIN	oral administration
HYDROXYPROPYL-GAMMA- CYCLODEXTRIN (HP-γ-CD)	/
HYDROXYPROPYL-BETA-CYCLODEXTRIN	Injection and oral administration
BETADEX SULFOBUTYL ETHER SODIUM	Injection
DIMETHYL BETA CYCLODEXTRIN	Injection
2,6-DIMETHYL BETA CYCLODEXTRIN	/
HYDROXYETHYL BETA CYCLODEXTRIN	/
Carboxymethyl beta-cyclodextrin	/
BETA CYCLODEXTRIN	/
PIROXICAM BETA CYCLODEXTRIN	oral administration
40% hydroxypropyl-β-cyclodextrin aqueous solution	/
CINNAMALDEHYDE-CYCLODEXTRIN INCLUSION COMPOUND	/
CURCUMIN-CYCLODEXTRIN INCLUSION COMPOUND	/



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