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## 22 Date of Revision

4 May 2017.

# Cetyl Palmitate

## 1 Nonproprietary Names

BP: Cetyl Palmitate

PhEur: Cetyl Palmitate

USP–NF: Cetyl Palmitate

## 2 Synonyms

Cetaceum; cetyl esters wax; cetyl palmitas; *Crodamol CP*; *DUBCARE PC*; *Dynacerin CP*; *Estol 3694*; *Hallstar 653*; hexadecanoic acid hexadecyl ester; hexadecyl palmitate; N-hexadecyl palmitate; *Kessco CP*; *Palmil C*; palmitic acid N-hexadecyl ester; palmityl palmitate; *Pelemol CP*; *Sabowax CP*; spermaceti (synthetic); *Stepan 653*.

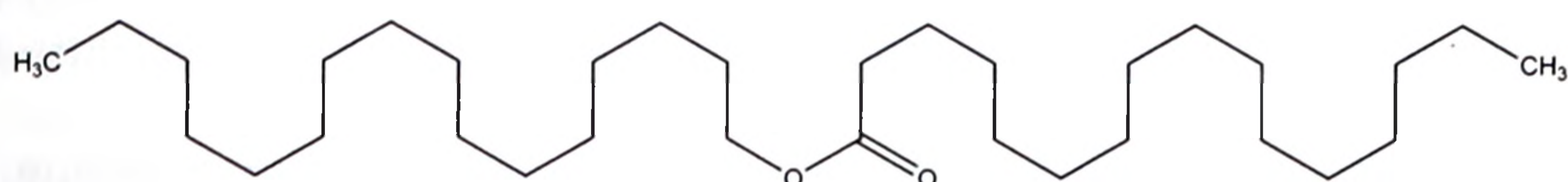
## 3 Chemical Name and CAS Registry Number

Hexadecyl hexadecanoate [540-10-3]

## 4 Empirical Formula and Molecular Weight

$C_{32}H_{64}O_2$  480.87

## 5 Structural Formula



## 6 Functional Category

Emollient; emulsifying agent; emulsion stabilizing agent; stiffening agent; viscosity-increasing agent.

## 7 Applications in Pharmaceutical Formulation or Technology

Cetyl palmitate is used as an emollient for topical products. It is also used as an emulsion stabilizing agent in shampoos, and as an emulsifying agent and viscosity-increasing agent in various lotions and creams. It also helps add texture and body to various personal care and cosmetic products, including sunscreens and anti-aging treatments.

## 8 Description

The USP 40–NF 35 S1 describes cetyl palmitate as consisting of esters of cetyl alcohol and saturated high-molecular-weight fatty acids, principally palmitic acid. The PhEur 9.2 describes cetyl palmitate as a mixture of esters of  $C_{14}$ – $C_{18}$  alcohols with lauric

(dodecanoic), myristic (tetradecanoic), palmitic (hexadecanoic), and stearic (octadecanoic) acids ('cetyl esters wax').

Cetyl palmitate occurs as white or almost white waxy plates, flakes, or powder.

## 9 Pharmacopeial Specifications

See Table I.

**Table I:** Pharmacopeial specifications for cetyl palmitate.

Test	PhEur 9.2	USP 40–NF 35 S1
Characters	+	–
Identification	+	+
Alkaline impurities	+	–
Melting point	45–52°C	46–53°C
Acid value	≤4	≤1
Appearance of solution	+	–
Hydroxyl value	≤20.0	≤6
Iodine value	≤2	≤1
Loss on drying	–	≤3.0%
Residue on ignition	–	≤0.05%
Saponification value	105–120	110–130
Heavy metals	–	≤0.002%
Nickel	≤1 ppm	–
Total ash	≤0.2%	–
Water	≤0.3%	–
Assay	+	+

## 10 Typical Properties

**Boiling point** 360–534°C<sup>(1–3)</sup>

**Density** 0.989 g/cm<sup>3</sup> <sup>(2,3)</sup>

**Flash point** >238°C for *Hallstar 653* (closed cup);<sup>(4)</sup> 269.8°C<sup>(1)</sup>

**Iodine value** 0.5 for *Hallstar 653*<sup>(4)</sup>

**Melting point** 43–56°C;

approx. 50°C for *Pelemol CP*;<sup>(5)</sup>

53°C for *Hallstar 653*.<sup>(4)</sup>

**Refractive index** 1.4425 (at 49.8°C)<sup>(2)</sup>

**Solubility** Soluble in boiling anhydrous ethanol and in methylene chloride; slightly soluble in light petroleum; practically insoluble in anhydrous ethanol and in water.

**Vapor pressure** <0.1 at 20°C for *Pelemol C*<sup>(5)</sup>

## 11 Stability and Storage Conditions

Cetyl palmitate should be stored in tightly closed containers in a cool, dry place away from direct sunlight and odors. Avoid exposure to excessive heat.