18 Japan Pharmaceutical Excipients Council. *Japanese Pharmaceutical Excipients 2004*. Tokyo: Yakuji Nippo, 2004: 443–444.

20 General References

Fitzgerald JE, *et al.* Cutaneous and parenteral studies with vehicles containing isopropyl myristate and peanut oil. *Toxicol Appl Pharmacol* 1968; 13: 448–453.

McAuley WJ, *et al.* The effects of esterified solvents on the diffusion of a model compound across human skin: an ATR-FTIR spectroscopic study. *Int J Pharm* 2013; 447(1–2): 1–6.

Nakhare S, Vyas SP. Prolonged release of rifampicin from internal phase of multiple w/o/w emulsion systems. *Indian J Pharm Sci* 1995; 57: 71–77.

21 Author

ME Quinn.

22 Date of Revision

4 May 2017.

Isopropyl Palmitate

1 Nonproprietary Names

BP: Isopropyl Palmitate

PhEur: Isopropyl Palmitate

USP–NF: Isopropyl Palmitate

2 Synonyms

Crodamol IPP; *Dermol IPP*; *Emerest 2316*; *Exceparl IPP*; hexadecanoic acid isopropyl ester; hexadecanoic acid 1-methylethyl ester; IPP; isopropyl hexadecanoate; isopropylis palmitas; *Kessco IPP*; *Lexol IPP-NF*; *Liponate IPP*; palmitic acid isopropyl ester; *Propal*; *Protachem IPP*; *Rita IPP*; *Stelliesters IPP*; *Stepan IPP*; *Tegosoft P*; *Unimate IPP*; *Waglinol 6016*; *Wickenol 111*.

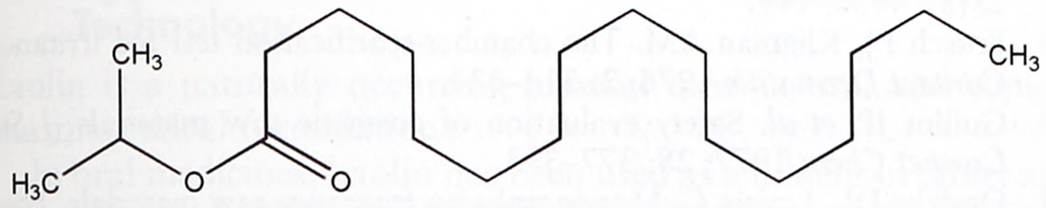
3 Chemical Name and CAS Registry Number

1-Methylethyl hexadecanoate [142-91-6]

4 Empirical Formula and Molecular Weight

$C_{19}H_{38}O_2$ 298.51

5 Structural Formula



6 Functional Category

Emollient; oleaginous vehicle; penetration enhancer; solvent; transdermal delivery component.

7 Applications in Pharmaceutical Formulation or Technology

Isopropyl palmitate is a nongreasy emollient with good spreading characteristics used in topical pharmaceutical formulations such as creams, lotions, gels, ointments and sprays; *see also* Table I.

Isopropyl palmitate is an established penetration enhancer for transdermal systems. It has also been used in controlled-release percutaneous films.

Isopropyl palmitate has been investigated in the production of reversed sucrose ester vehicles[1] and used in nanoparticulate drug delivery systems.[2] It has also been investigated in microemulsion systems[3] for transdermal delivery, and as the organic phase for formation of lecithin organogels,[4] which may also be used in transdermal delivery systems.

Table I: Uses of isopropyl palmitate.

Use	Concentration (%)
Detergent	0.005–0.02
Perfume	0.2–0.8
Soap	0.05–0.2
Topical aerosol spray	3.36
Topical creams and lotions	0.05–5.5

8 Description

Isopropyl palmitate occurs as a clear, colorless to pale yellow-colored, practically odorless viscous liquid that solidifies at less than 16°C.

9 Pharmacopeial Specifications

See Table II.

Table II: Pharmacopeial specifications for isopropyl palmitate.

Test	PhEur 9.2	USP 40–NF 35 S1
Identification	+	+
Characters	+	–
Acid value	≤1.0	≤1.0
Appearance of solution	+	–
Iodine value	≤1.0	≤1.0
Relative density	≈0.854	0.850–0.855
Residue on ignition	≤0.1%	≤0.1%
Refractive index	1.436–1.440	1.435–1.438
Saponification value	183–193	183–193
Viscosity	5–10 mPa s	–
Water	≤0.1%	–
Assay (of $C_{19}H_{38}O_2$)	≥90.0%	≥90.0%

10 Typical Properties

Boiling point 160°C at 266 Pa (2 mmHg)
Flash point >100°C (open cup) for *Crodamol IPP*.
Freezing point ≈13–15°C