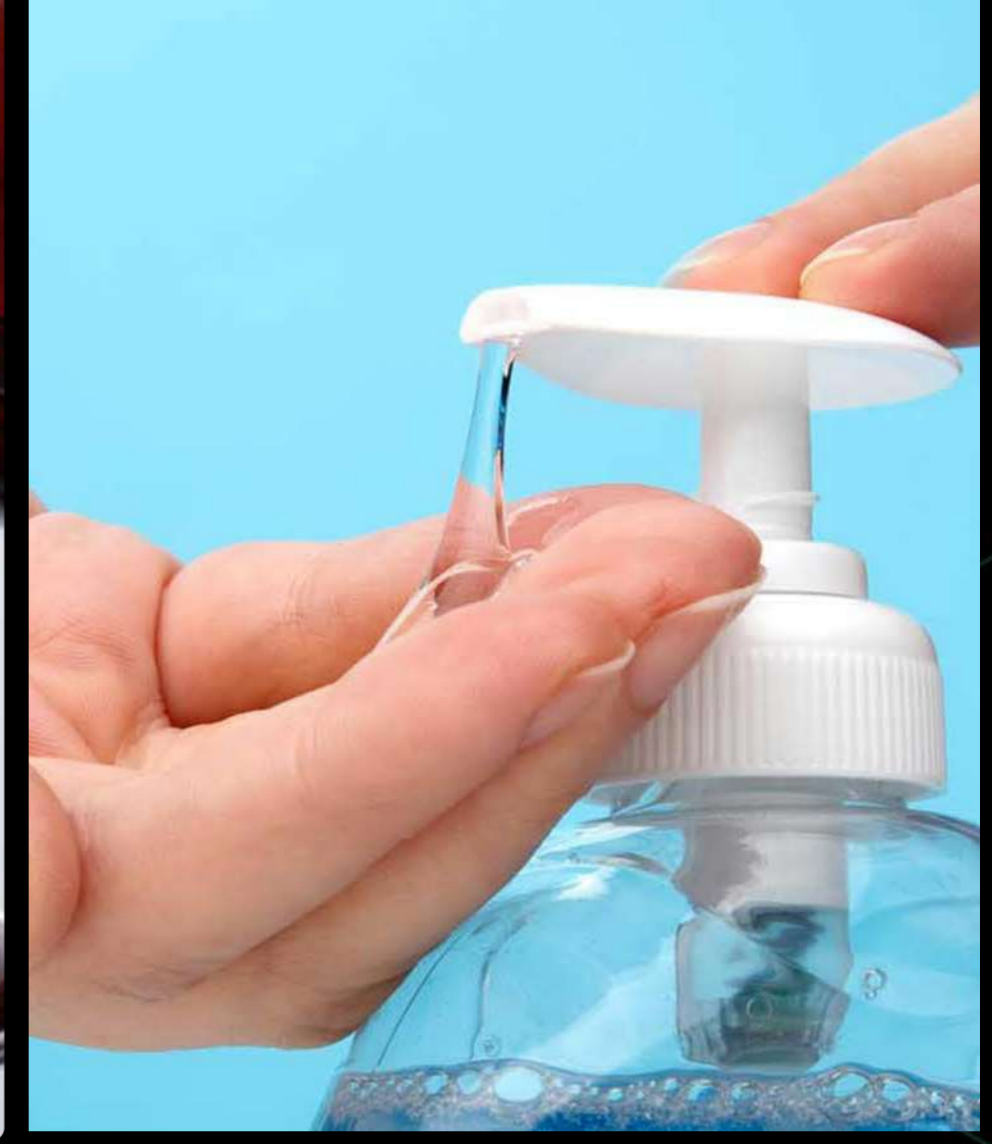


Leepol[®] HCO

Castor Oil
Derivatives



Hair Care | Skin Care
Face Care | Sun Care

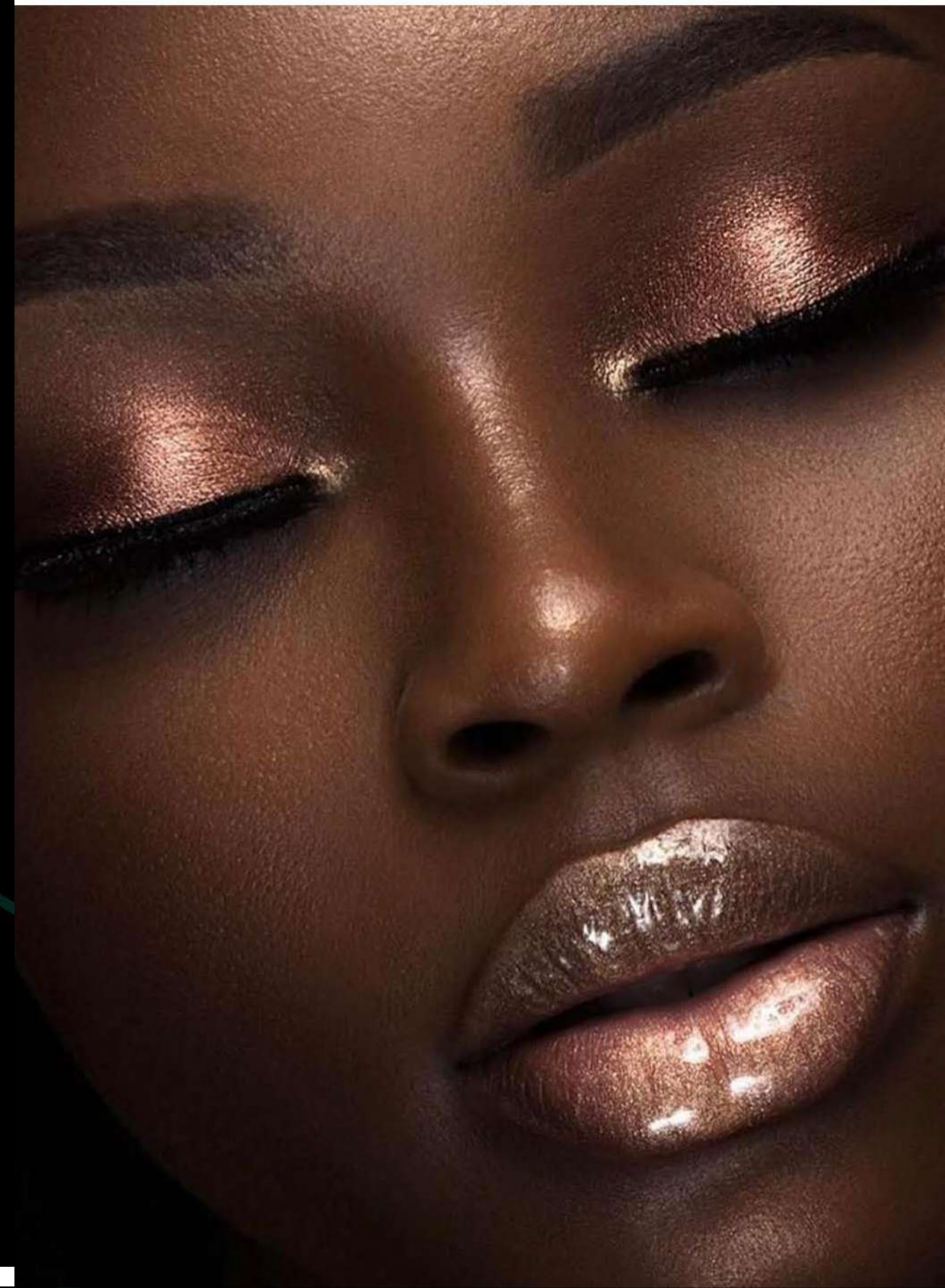
Vitamin Solubilizer
Oil & Perfume Solubilizer
API Solubilizer
Dissolution Improver
Cream Emulsifier

HCO K - 140

HCO K - 150

HCO K - 160

Leepol[®] is an advancement of
Coating Material Science
& Polymer Chemistry.



Leepol® HCO grades are chemically castor oil derivatives. They are non ionic solubilizer obtained by reacting hydrogenated castor oil with ethylene oxide. They are suitable for multiple applications providing solubilizing and emulsifying capacity to many of cosmetics and personal care products. They are effective solubilizer for perfumes, essential oils and other oils soluble cosmetic actives. They act as wonderful emulsifier for oil in water and water in oil emulsion system.

Mechanism

- ☐ Modify the polarity of water.
- ☐ Alter various properties like density, surface tension, viscosity, boiling point and specific heat of solution in various ways.
- ☐ Wetting the surface of solutes by lowering the contact angle between the solute and the wetting liquid.
- ☐ Increases the solvation/hydration of solutes.
- ☐ It solubilize the insoluble particles by converting them into small (nano) size particles with or without heating.

Benefits

- ☐ Required lesser ratio compare to other solubilizers
- ☐ Transparency improver
- ☐ Cost effective
- ☐ Volatility retardant
- ☐ Better stability at storage and elevated temperature
- ☐ GRAS status

Applications

- | | | |
|-------------------|-----------------------|----------------------------|
| ☐ Face wash | ☐ Shampoo | ☐ Body spray |
| ☐ Body mist | ☐ After shave cologne | ☐ Serum |
| ☐ Shower gel | ☐ Liquid soaps | ☐ Skin care creams/lotions |
| ☐ Sun care | ☐ Baby care products | ☐ Hair care products |
| ☐ Air freshner | ☐ Detergent cleansers | ☐ Wetting agent for waxes |
| ☐ Hand sanitizers | ☐ Aerosol formulation | ☐ Decorative cosmetics |

Functions

Solubilizer

Leepol® HCO range improves water solubility of major water insoluble products. It is compatible with most of all ingredients. It helps to solubilize different Vitamins like vitamin A palmitate, vitamin D, vitamin E, acetate etc. It is also used as solubilizer and stabilizer for oils and perfumes in cosmetic industries.

Emulsifier

Leepol® HCO range is excellent versatile nonionic emulsifying agent. It emulsifies major hydrophobic substances like fatty acids, fatty alcohols, mineral oil etc. It is suitable to obtain O/W cream and lotions, also can be used as stabilizer for skin care. It has an excellent emulsifying ability and suitable for emulsification of mineral oil, natural oil, stearyl etc.

Moisturizer

Leepol® HCO range improves moisturizing effect and soft feeling of topical formulations.

Transparency Improver

Leepol® HCO range solubilizes insoluble oily substances in aqueous system and hence it improves transparency and shining. In cosmetic formulations, it impacts elegance appearance of products such as shaving gel, hair styling gel, hand wash gel etc.

Volatility Retardant

Leepol® HCO range retards volatilities of solvents. It can be used for highly volatile products like after shave lotion, perfumes etc. to retain its effect for longer period.

Film Former

Leepol® HCO range improves film forming capacity and flow properties in cream, lotion, lipstick etc.

Adhesion Reducer

Leepol® HCO reduces adhesion and chipping properties of oils. It gives smooth feeling in all cosmetic (Creams and lotions, hair oils etc.) formulations.

Aerosol Formulations

Leepol® HCO improves solubility of the propellant in aqueous phase of aerosol.

Characteristics of Leepol® HCO grades

Characteristics	Leepol® HCO K-140	Leepol® HCO K-150	Leepol® HCO K-160
Chemical Name	<ul style="list-style-type: none">• PEG-40 Hydrogenated Castor Oil (USP/NF)• Macrogol-Glycerol hydroxystearate (Ph.Eur.)	PG, PEG-40 Hydrogenated Castor Oil (In House)	PEG-60 Hydrogenated Castor Oil (In House)
Description	White to pale yellow Viscous liquid or soft thin paste	White to pale yellow Viscous liquid	White to off white Paste
Odor	Odorless	Odorless	Odorless
Taste	Tasteless	Tasteless	Tasteless
Miscibility	At elevated temperatures, it forms clear mixtures with fatty acids and fatty alcohols.		
Effect of temperature	Leepol® HCO grades are stable and does not turn rancid unless subjected to excessive heat.		
Saponification value	45-69	45-55	35-45
Hydroxyl value	60-80	65-75	50-70
Congealing temperature	16-26°C	5-15°C	-
pH value of 10% aqueous solution	6.0-7.0	6.0-7.0	6.0-8.0
Water content (K. Fischer)	NMT 3.0%	NMT 3.0%	NMT 2.0%
HLB value	14-16	14-17	15-17

Usage

Leepol® HCO usage level depends upon the nature of perfume or essential oil in cosmetic products. Generally, upto 1:3 perfume to solubilizer ratio is used to solubilize the perfume or essential oil effectively. If the perfume or active ingredient is highly water insoluble then Leepol® HCO usage level should be increased to make a clear solution. The usage level of Leepol® HCO grades is generally 2 to 5% as an emulsifier for the preparation of cosmetic formulations.

To give general idea about the solubilization properties of Leepol® HCO grades, the following table lists the quantities of solubilizer required to obtain clear solutions with 1 gm of the ethereal oils and fragrances listed and 0.2 g of the hydrophobic active substances listed.

Leepol® HCO grades are chemically castor oil derivatives. They are non-ionic solubilizers and emulsifying agents obtained by reacting hydrogenated castor oil with ethylene oxide. They consist hydrophobic and hydrophilic part. They are almost tasteless and odorless. They are used as solubilizer for fat-soluble vitamins, perfumes, essential oils and other hydrophobic pharmaceuticals. They have ability to solubilize or emulsify oil soluble ingredients and convert them into clear transparent solution or stable emulsion respectively. It improves the solubility of poorly soluble drugs (BCS class II and class IV).

Mechanism of Leepol® HCO:

- ☑ Modify the polarity of water.
- ☑ Alter various properties like density, surface tension, viscosity, boiling point and specific heat of solution in various ways.
- ☑ Wetting the surface of solutes by lowering the contact angle between the solute and the wetting liquid.
- ☑ Increases the solvation/hydration of solutes.
- ☑ It solubilize the insoluble particles by converting them into small (nano) size particles with or without heating.

Typical specification

Name	Leepol® HCO K-140	Leepol® HCO K-150	Leepol® HCO K-160
Saponification value	45-69	45-55	35-45
Hydroxyl value	60-80	65-75	50 70
Congealing temperature	16-26°C	5-15°C	
pH value of 10% aqueous solution	6.0-7.0	6.0-7.0	6.0-8.0
Water content (K. Fischer)	NMT 3.0%	NMT 3.0%	NMT 2.0%
HLB value	14-16	14-17	15-17

Characteristics of Leepol® HCO grades:

Characteristics	Leepol® HCO K-140	Leepol® HCO K-150	Leepol® HCO K-160
Chemical Name	<ul style="list-style-type: none"> • PEG-40 Hydrogenated Castor Oil (USP/NF) • Macrogol-Glycerol hydroxystearat (Ph.Eur.) 	PG, PEG-40 Hydrogenated Castor Oil (In House)	PEG-60 Hydrogenated Castor Oil (In House)
Description	White to pale yellow Viscous liquid or soft thin paste	White to pale yellow Viscous liquid	White to off white Paste
Odor	Odorless	Odorless	Odorless
Taste	Tasteless	Tasteless	Tasteless
Miscibility	At elevated temperatures, it forms clear mixtures with fatty acids and fatty alcohols.		
Effect of temperature	Leepol® HCO grades are stable and does not turn rancid unless subjected to excessive heat.		
Solubility	It forms clear solutions, in water, ethanol, 2-propanol, n-propanol, ethyl acetate, chloroform, tetrachloride, toluene.	It forms clear solutions, in water, ethanol, 2-propanol, n-propanol, ethyl acetate, chloroform, carbon tetrachloride, toluene.	It forms clear solutions in water, ethanol, 2-propanol, n-propanol.

Characteristics of Leepol[®] HCO grades

The solubilizing capacity of the various active ingredients with Leepol[™] HCO grades is given in different ratio as follow.

Active ingredient (1 gm)	Leepol [®] HCO K-140 (gm)	Leepol [®] HCO K-150 (gm)	Leepol [®] HCO K-160 (gm)
Acetaminophen		5	
Vitamin A Palmitate	5		
Vitamin D	5		
Vitamin E Acetate	5		
Bromhexine Hydrochloride		30	
Ambroxol Hydrochloride		15	
Cyproheptadine Hydrochloride		60	
Dextromethorphan Hydrobromide		5	
Povidone Iodine	0.3		
Cod Liver Oil	10		10
Chlorhexidine Gluconate (20%)	10	10	
Acebrophylline		30	
Menthol		4	

Note: Above table shows best suitable option of Leepol[®] HCO grades for different active ingredients. All Leepol[®] HCO grades are capable of solubilizing above active ingredients in different ratio. Please contact us for formulation details of other active ingredients. Leepol[®] HCO grades shows little tendency to foaming which can be suppressed by adding a small amount of defoamer.

Applications:

Solubilizer

Leepol[®] HCO range improves water solubility of major water insoluble products. It is compatible with most of all ingredients. It helps to solubilize different pharmaceutical active ingredients like Acetaminophen, Bromhexidine HCl, Dextromethorphan HBr, Povidone Iodine, Loxapine Succinate, Vitamins like Vitamin A Palmitate, Vitamin D, Vitamin E Acetate etc. It is also used as solubilizer and stabilizer for oils and perfume in cosmetic industries.

Dissolution Improver

It is generally used between 3.0% to 5.0% w/w of API to improve dissolution of poorly soluble active ingredients like Cefuroxime Axetil, Cefpodoxime Proxetil, Albendazole etc. It should be mixed with API with or without heating and then dissolved in vehicle (Aqueous / Non aqueous).

Emulsifier

Leepol[®] HCO range is excellent versatile nonionic emulsifying agent. It emulsifies major hydrophobic substances like fatty acids, fatty alcohols, mineral oil etc. It is suitable to obtain O/W cream and lotions, also can be used as stabilizer for skin care. It has an excellent emulsify ability, suitable for emulsification of mineral oil, natural oil, stearyl etc. It can obtain a steady system when used alone.

Moisturizer

Leepol[®] HCO range improves moisturizing effect and soft feeling.

Transparency Improver

Leepol[®] HCO range solubilizes insoluble oily substances in aqueous system and hence it improves transparency and shining. In cosmetic formulation, it impacts elegance appearance of products such as shaving gel, hair styling gel, hand wash gel etc. In pharmaceutical syrup formulations, it improves transparency.

Volatility Retardant

Leepol[®] HCO range retards volatilities of solvents. It can be used for highly volatile products like after shaving lotion, perfumes etc. to retain its effect for longer period.

Volatility Retardant

Leepol® HCO range retards volatilities of solvents. It can be used for highly volatile products like after shaving lotion, perfumes etc. to retain its effect for longer period.

Film Former

Leepol® HCO range improves film forming capacity and flow properties. Leepol® HCO is preferred in cream, lotion, lipstick etc. to improve film forming capacity.

Masking Agent

Leepol® HCO masks unpleasant taste and odour of typical formulations like pharmaceutical syrup containing alcohols and suspension like artemether and lumefantrine suspension.

Adhesion Reducer

Leepol® HCO reduces adhesion and chipping properties of oils. It gives smooth feeling on application like in all pharmaceuticals and cosmetic (Creams and lotions, hair oils etc.) formulations.

Aerosol Formulations

Leepol® HCO improves solubility of the propellant in aerosol in aqueous phase.

Toxicity

Acute and chronic toxicity test in animals have shown that Leepol™ HCO grades are essentially non-toxic and non-irritant material.

Storage & Handling

Leepol® HCO grades must be stored in a tightly closed container. If the containers are repeatedly opened, microorganisms may grow in the product, particularly the equipment used is not sterile. For proper handling and sampling homogenization of the container content is necessary. It is recommended to use electrical drum heaters, heating covers or a heating chamber.

Retest date

At least two years from date of manufacturing in intact condition.

Packing

20kg & 50kg net in plastic carboy & 200kg plastic drums.