

Alkyl Benzoate

Finsolv® TPP

INCI Name: C12-15 Alkyl Benzoate (and) Dipropylene Glycol Dibenzoate (and) PPG-15 Stearyl Ether Benzoate

CAS Nos.: 68411-27-8, 27138-31-4, 108347-90-6 EINECS Nos.: 270-112-4, 248-258-5, Polymer

Finsolv® TPP is a propriety blend of three unique benzoate esters which perform synergistically in personal care applications. Finsolv® TPP is a superior solubiliser for sunscreen actives. This allows for improved product performance and stability with reduced chance of recrystallisation.

Finsolv® TPP exhibits exceptional tactile and performance improvements over the individual materials that comprise it. The C12-15 alkyl benzoate moiety exhibits a soft, smooth, non-greasy rub in while the dipropylene glycol dibenzoate adds an occlusive property and the PPG-15 stearyl ether benzoate helps in coupling the three esters. This unique blend of emolliency and occlusiveness combine to produce a moisturiser with superior tactile and performance properties. In a side-by-side comeometer study, Finsolv® TPP provides similar moisturisation benefits over 6 hours as petrolatum but while imparting a dry, non-greasy and cosmetically elegant emollient feel.

Applications

The multifunctional properties of Finsolv® TPP allow it to be used for many applications in personal care areas:

Skin care

As a moisturiser, emollient and skin conditioning agent, which imparts a light, dry and non-oily, feel to the skin. Especially useful in make-ups and day creams and lotions containing SPF.

Sun Care

For improved solubilisation of active UV filters and enhanced tactile properties. Can be used in sprays and gels as well as lotions.

Antiperspirants/Deodorants

Reduces the white residue left on the skin from antiperspirant salts. In addition, the high refractive index makes it suitable for use in clear products.



TYPICAL PROPERTIES

Not intended for use in preparing specifications

Appearance	Clear , almost colourless to light yellow liquid
Odour	Very mild, pleasant
Colour, APHA	200 maximum
Acidity, mg KOH/g	0.20 maximum
Saponification Value, mg KOH/g	192 - 202
Moisture	0.20 maximum

Finsolv® TPP exhibits synergistic properties in that it is soluble in a wider range of materials than its individual components. This in combination with its sunscreen solubility and moisturization attributes makes Finsolv® TPP a truly unique and functional emollient.

Solubility of Finsolv® TPP

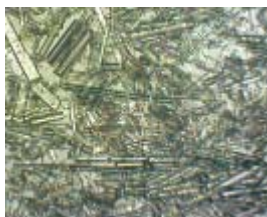
Acetone	Soluble
Beeswax*	Soluble
Castor Oil	Soluble
Ethanol	Soluble
Isopropanol	Soluble
Isopropyl Myristate	Soluble
Isopropyl Palmitate	Soluble
Lanolin	Soluble
Paraffin wax*	Soluble
Volatile Silicones	Soluble
Vegetable Oil	Soluble

*Soluble Hot

Sunscreen Solubility

Finsolv® TPP has an outstanding ability to prevent the re-crystallisation of sunscreens in a formulation. This allows for maximum UV protection as well as even spreading on the skin. Sunscreen crystal growth Finsolv® TPP prevents sunscreen (oxybenzone & avobenzone) crystals from forming.

Sunscreen crystal growth
(oxybenzone & avobenzone)

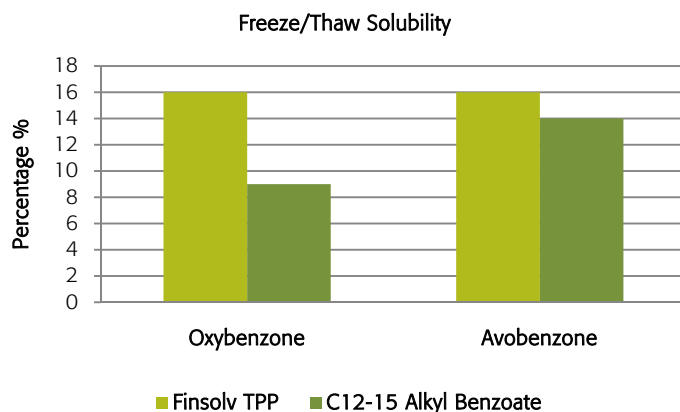


Finsolv® TPP prevents
sunscreen crystals from forming



U.S. Guidelines

Freeze/thaw conditions are the most difficult conditions for sunscreen formulations to pass because of the ease of crystal growth. Under freeze/thaw conditions, the maximum solubility of Oxybenzone in Finsolv® TPP is 16%. The maximum solubility of Avobenzone solubilised in Finsolv® TPP is 16%.



EU Guidelines

In accordance with EU regulatory guidelines, the maximum threshold of sunscreens to solubilizer in freeze/thaw is as follows:

Solubilizer	Finsolv® TPP	C12-15 Alkyl Benzoate
Solubility of Bis-thylhexyl oxphenol methoxyphenyl triazine only (Tinosorb S)	50%	25%
Solubility of Ethylhexyl triazone only (Uvinul T150)	~30%	10%
Solubility of Diethylamino Hydroxybenzoyl Hexyl Benzoate (Uvinul A Plus)	64%	>78%*
Solubility of Diethylhexyl Butamido Triazone (Uvasorb HEB)	>46%	>46%

*solubility drastically reduced at refrigeration temperatures

Additional solubility data available upon request.

In practice, sunscreens are often used in combination with each other in order to provide optimal broad spectrum UV protection. Finsolv® TPP shows exceptional solubilisation ability when a combination of oxybenzone/avobenzone is used thus showing a synergistic effect in improved solubility related to the combination of the 2 UV filters.

Suggested Formulations

Water Resistant Sun Spray AC030

	INCI Ingredients	Tradename (Supplier)	% w/w
A	Alcohol denatured	Denatured Ethanol	q.s. to 100
B	Triethanolamine (99%)	Triethanolamine (Dow)	0.90
C	Acrylates/Octylacrylamide Copolymer	Dermacryl 79	2.00
D	Octocrylene	Escalol 597 (ISP)	2.30
	Ethylhexyl Salicylate	Escalol 587 (ISP)	5.00
	Ethylhexyl Methoxycinnamate	Escalol 557 (ISP)	7.50
	Butyl Methoxydibenzoylmethane	Escalol 517 (ISP)	3.00
	Benzophenone-3	Escalol 567 (ISP)	6.00
	C12-15 Alkyl Benzoate (and Dipropylene Glycol Dibenzoate (and PPG-15 Stearyl Ether Benzoate	Finsolv® TPP (Innospec)	14.00
E	Cyclopentasiloxane (and) Cyclohexasiloxane	Dow Corning 345 Fluid (Dow Corning)	5.00

Preparation Procedure

1. Add ingredient B into the denatured product.
2. Add and homogenise ingredient C into the alcohol solution until crystal clear.
3. Add and mix in a separate beaker all ingredients of phase D and heat to 75-80°C until a crystal clear solution is obtained.
4. Cool down to below 40°C.
5. Add and mix ingredient E into the oil phase.
6. Add and homogenise the oil phase into the alcohol solution until crystal clear.

Properties

Appearance	Crystal clear, water-thin, yellowish solution
pH	N/A
Star rating	3 star
Stability	Passed 5 cycles freeze/thaw

Antiperspirant Stick AC064

	INCI Ingredients	Tradename (Supplier)	% w/w
A	C12-15 Alkyl Benzoate (and) Dipropylene Glycol Dibenzoate (and) PPG-15 Stearyl Ether Benzoate	Finsolv® TPP (Innospec)	27.25
	Polyethylene	Performalene 400 Polyethylene (New Phase)	2.40
	C20-40 Alcohols	Permacol 425 Alcohol (New Phase)	9.60
B	Dimethicone PEG/PPG-20/23 Benzoate	Finsolv® SLB-101 (Innospec)	3.75
	Hydrogenated castor oil	Castorwax MP 70 (Cas Chemical Incorporated)	2.25
	PEG-8 Distearate	Protamate 400 DS (Protameen)	1.75
	Stearth-100	Brij 700 (Croda)	1.00
C	Aluminum Starch Octenylsuccinate	Dry-Flo PC (National Starch)	7.00
	Aluminum Zirconium Tetrachlorohydrate-Glycine	REZAL 36 GP Powder (Reheis)	20.00
D	Cyclopentasiloxane	DC344 (Dow Corning)	25.00

Preparation Procedure

1. Add and melt all ingredients of phase A to over 80°C and mix until homogeneous.
2. Add and mix well ingredients of phase B at 80°C until melted or homogeneous.
3. Mix and add premix C at 75°C.
4. Add ingredient D below 70°C.
5. Cool to about 60°C and pour into moulds.

Properties

Appearance	Ivory stick
Stability	1 month at 45°C

For further information, please email your region:

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