

A vegetable-based emollient with light skin feel

Intended use

Liquid lipophilic emollient

Benefits at a glance

- Clear, low-viscous emollient that provides a non-oily skin feel and quick absorption into the skin
- Helps in formulating natural cosmetic products with a more light sensory profile
- Fully based on renewable sources
- Produced by an enzymatic process that leads to savings of > 60% on energy consumption and CO₂ emission
- NaTrue and COSMOS certified, approved by Ecocert

INCI (PCPC name)

Isoamyl Cocoate

Chemical and physical properties (not part of specifications)

Form	liquid
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Further product information (not part of specifications)

Density at 25 °C (g/cm ³)	approx. 0.854
Viscosity at 25 °C according to Höppler (mPa · s)	approx. 6

Surface tension at 25 °C according to ring method (mN/m)	approx. 28
Spreadability	medium spreading
Polarity	medium polarity
Pour point (°C)	-3 °C

Properties

- TEGOSOFT® AC is a low-viscous emollient. It can be easily distributed on the skin and it shows a quick absorption behavior without leaving a waxy film on the skin.
- It imparts a light, non-oily skin feel in cosmetic emulsions.
- It shows excellent wetting properties of hydrophobically coated pigments.
- It is miscible with all common cosmetic oils and can easily be used in O/W and W/O formulations.
- TEGOSOFT® AC is an emollient ester of isoamyl alcohol and fatty acid of 100% vegetable origin which are sugar beet, palm and coconut.
- It is produced by the eco-efficient Evonik enzymatic process which yields a high-purity product.
- A lifecycle assessment shows general savings in e. g. energy consumption and CO₂ emission comparing the enzymatic with the conventional esterification process.^[1]

[1] O. Thum, K. M. Oxenboll *SÖFW*, 2008, 134, 44–47

Pigment wetting

Beside traditional foundations a huge number of trendy market products (e.g. BB creams) contain pigments. Therefore it is important to formulate them in a proper way. This property was evaluated in a pigment wetting test using some of the most commonly applied metal oxide pigments with Dimethicone coating. Uncoated Carbon Black was also evaluated.

The ratio of the pigments versus the corresponding emollient was optimized for the highest pigment loading. This allowed clear differentiation of the emollient performance.

The viscosity at 1/100 seconds was measured using a Haake RheoStress rheometer. Measurements were taken at room temperature, unless noted. The lower the viscosity, the better the pigment wetting.

This test has shown that TEGOSOFT® AC displays excellent pigment wetting properties for hydrophobically coated pigments.

No.	Product name	INCI	Overall pigment wetting capability	Score					
				1	2	3	4	5	
1	TEGOSOFT® AC	Isoamyl Cocoate	●●●●●						
2	TEGOSOFT® P	Isopropyl Palmitate	●●●●●						
3	TEGOSOFT® M	Isopropyl Myristate	●●●●●						
4	TEGOSOFT® MM*	Myristyl Myristate	●●●●●						

	Yellow iron oxide, CI 77492		Carbon black, CI 77266
	Black iron oxide, CI 77499		Titanium dioxide, CI 77891
	Red iron oxide, CI 77491		

Score values reflect the viscosity of the respective pigment/emollient dispersion. The lower the score value, the better the pigment wetting.

Rating of overall pigment wetting capability:

●●●●● superior ●●●●● very high ●●●● high

●●● medium ●● low ● very low

* Emollient waxes are measured at elevated temperatures above their melting point.

Formulation hints

Slight hydrolyzation of isoamyl esters can occur at pH below 7. This has no effect on the stability of the emollient or formulation and in perfumed formulations this effect is negligible. In unperfumed formulation a odor of isoamyl alcohol could be perceived. This has to be taken into account e. g. formulating with natural preservatives.

For the combination of isoamyl esters and sun protection filters the patent EP 2421614 and its equivalents have to be considered.

Applications

- Natural cosmetic products (see formulation hints)
- Facial and body care emulsions, gels and serums
- Baby Care
- Sprayable emulsions
- Antiperspirants/Deodorants
- Color cosmetics

Suggested usage concentration

1 – 10% TEGOSOFT® AC, up to 30% for make-up

Packaging

720 kg pallet (4 x 180 kg drum)

Storage

Store at max. 25 °C

Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

Guideline formulations

O/W Serum (MK 10/10-4)	
Phase A	
TEGO® Care 165 (Glyceryl Stearate; PEG-100 Stearate)	3.00%
TEGO® Alkanol 18 (Stearyl Alcohol)	0.50%
TEGOSOFT® AC (Isoamyl Cocoate)	5.50%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	5.00%
TEGOSOFT® CR (Cetyl Ricinoleate)	1.00%
Phase B	
Water	76.125%
Glycerin	3.00%
TEGO® Pep 4-17 (Tetrapeptide-21; Glycerin; Butylene Glycol; Aqua)	2.50%
TEGO® Pep 4-Even (Tetrapeptide-30, Glycerin)	2.50%
TEGO® Carbomer 141 G (Carbomer)	0.075%
Phase C	
Sodium Hydroxide (10% in water)	q.s.
Phase D	
Dipropylene Glycol; Methylparaben; Ethylparaben; Aqua; Methylisothiazolinone (Microcare MEM, Thor)	0.80%
Processing:	
<ol style="list-style-type: none"> 1. Heat phase B to approx. 75 °C and disperse TEGO® Carbomer 141 G. 2. Heat phase A separately to approx. 75 °C. 3. Add phase A to phase B with stirring.¹⁾ 4. Homogenize. 5. Cool with gentle stirring. 6. Add phases C and D below 40 °C. 	
¹⁾ Important: If phase A has to be charged into the vessel first, phase B must be added without stirring .	

Mattifying Compact Cream Make-up (AL 1/13-13)	
Phase A	
TEGOSOFT® AC (Isoamyl Cocoate)	31.70%
TEGOSOFT® XC (Phenoxyethyl Caprylate)	13.00%
TEGOSOFT® OP (Ethylhexyl Palmitate)	8.00%
TEGOSOFT® CR (Cetyl Ricinoleate)	5.00%
ABIL® Wax 9840 (Cetyl Dimethicone)	1.00%
Helianthus Annuus (Sunflower Seed Wax)	4.00%
Ozokerite	2.00%
Phase B	
Titanium Dioxide, CI 77891 (Kronos 1171, Kronos)	12.00%
Yellow Iron Oxide (Gelb 10 E, Sicovit)	1.00%
Brown Iron Oxide (Braun 70 E, Sicovit)	0.60%
Red Iron Oxide (Rot 30 E, Sicovit)	0.30%
Black Iron Oxide (Schwarz 80 E, Sicovit)	0.20%
TEGOLON® ECO 10-10 (Nylon-10/10)	20.00%
Phase C	
Glyceryl Caprylate (Dermosoft GMCY, Dr. Straetmans)	1.00%
Perfume	0.20%
Processing:	
<ol style="list-style-type: none"> 1. Heat phase A to 82 °C. 2. Premix and grind phase B. 2. Add phase B to phase A and stir gently at 80 °C several minutes. 3. Cool to 75 °C with gentle stirring. 3. Add phase C with gentle stirring. 4. Pour mixture into moulds and cool down to room temperature. 	

Skin Firming Body Lotion (MM 221/2)	
Phase A	
ISOLAN® GPS (Polyglyceryl-4 Diisostearate/Polyhydroxystearate/Sebacate)	2.5%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	7.5%
TEGOSOFT® AC (Isoamyl Cocoate)	6.0%
Simmondsia Chinensis (Jojoba) Seed Oil	5.0%
Beeswax	0.6%
Hydrogenated Castor Oil	0.4%
Phase B	
Glycerin	3.0%
Magnesium Sulfate Heptahydrate	1.0%
Water	71.0%
Phase C	
TEGO® Stemlastin (Cyanidium Caldarium Extract)	3.0%
Phase Z	
Preservative, perfume	q.s.
Processing:	
<ol style="list-style-type: none"> 1. Heat phase A to approx. 80 °C. 2. Add phase B (80 °C or room temperature) slowly while stirring. 3. Homogenize for a short time. 4. Cool with gentle stirring and add phase C below 40 °C. 5. Homogenize again below 30 °C. 	

Icy and Smooth After Sun Gel (SG 44/11-7)	
Phase A	
TEGOSOFT® SH (Stearyl Heptanoate)	5.00%
TEGOSOFT® AC (Isoamyl Cocoate)	5.00%
TEGO® Carbomer 341 ER (Acrylates/C10-30 Alkyl Acrylate Crosspolymer)	0.30%
TEGO® Carbomer 140 (Carbomer)	0.30%
TEGOLON® ECO 10-10 (Nylon-10/10)	0.30%
Phase B	
Water	81.90%
Glycerin	2.00%
HyaCare® (Sodium Hyaluronate)	0.10%
TEGO® Cosmo C 100 (Creatine)	0.50%
Phase C	
Alcohol	2.00%
Phase D	
Sodium Hydroxide (10% in water)	1.80%
Phase E	
Dipropylene Glycol, Methylparaben, Ethylparaben, Aqua, Methyliso- thiazolinone (Microcare MEM, Thor)	0.80%
Phase Z	
Perfume	q.s.

Processing:

1. Disperse the powders in phase A.
2. Mix ingredients of phase B separately.
3. Combine both phases and homogenize.
4. Add phase C and stir well.
5. Add phase D and adjust the pH value to approx. 7.0.
6. Add phase E while stirring.

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