MIGLYOL®

REPLACING LIGHT SILICONE OILS WITH ESTER EMOLLIENTS

IOI OLEOCHEMICAL

IOI Oleo GmbH
PERSONAL CARE

MIGLYOL®

Silicones have been present in many personal care formulations for decades due to their interesting sensorial profile. For a long time, formulators have found it difficult to substitute the different silicones and maintain the same sensorial profiles in their products. However, in recent years many interesting emollients appeared in the personal care industry that allow to substitute silicone oils, particularly the light, fast spreading low molecular species. IOI Oleo has a range of light emollients that, for instance, makes it easy to replace Cyclomethicone or low weight Dimethicone without losing the special skin feel that these ingredients impart to skin care products.

MIGLYOL® Coco 810

(INCI: Coco Caprylate/Caprate) is the fastest spreading product in the range. With its non-polar character, this 100% natural ingredient instantly creates an elegant, silky smoothing film on the skin that will not dominate over the medium spreading oils in the formulation. It is well suited to decrease heavy and greasy skin feel of slow spreading oils and will benefit the formulation with a long-lasting care effect.

MIGLYOL® T-C7

(INCI: Triheptanoin) is another fully natural emollient with extremely high spreading on the skin. Unlike most other high spreading silicone replacements, this product is a triglyceride like most vegetable oils found in nature. The difference lies in the short fatty acid chains derived from castor oil. This palm-free emollient is highly polar as well and therefore an excellent solvent for organic UV filters and a powerful dispersing aid for pigments.

MIGLYOL® 8810

(INCI: Butylene Glycol Dicaprylate/Dicaprate) and **MIGLYOL® PPG 810** (INCI: Propylene Glycol Dicaprylate/Dicaprate) are two light emollients belonging to the same chemical family. Both ingredients are excellent solvents for UV filters and widely established in many sun care formulations. The high polarity of these ingredients also helps dispersing pigments, thus it does not surprise that they have been used in color cosmetics and BB creams already for many years.

Typical properties of our light emollients

Characteristics	MIGLYOL® Coco 810	MIGLYOL® T-C7	MIGLYOL® PPG 810	MIGLYOL® 8810
Odor	Neutral	Neutral	Neutral	Neutral
Appearance	Colorless liquid	Colorless liquid	Colorless liquid	Colorless liquid
Polarity	Low-medium	High	High	High
Viscosity [mPas, 20 °C]	9–12	15–23	9–12	9–15
Spreading behavior	Fast	Fast	Fast	Fast
Film forming	Low-medium	Medium	Low	Low-medium
Natural origin	100%	100%	79%	76%
Remarks	RSPO MB available	Non-palm source	RSPO MB available	RSPO MB available
Pigment dispersion	Low-medium	Very good	Very good	Good
Skin feel	Light, dry, silky	Light, substantive, good lubrication	Light, dry, non-oily	Light, dry, non-oily
Compliant with natural cosmetics	Yes	Yes	No	No

Silicone replacement made as natural and sustainable as possible: the two natural ingredients MIGLYOL® Coco 810 and MIGLYOL® T-C7 are COSMOS approved and generally all our palm-based ingredients are available also as RSPO MB certified grades.

Cyclomethicone D5 vs MIGLYOL® Coco 810

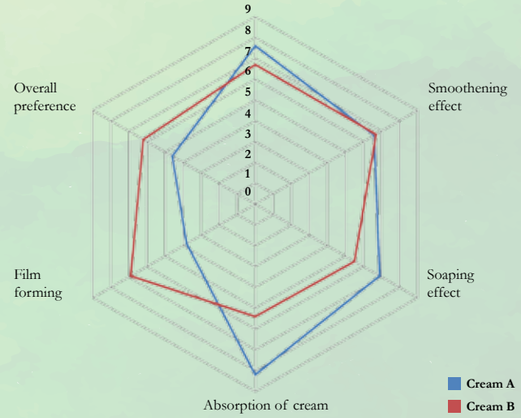
Sensorial evaluation

Composition of cream A and cream B used in the sensorial test

Tradename	INCI	Cream A %	Cream B %
IMWITOR® 372 P	Glyceryl Stearate Citrate	3.0	3.0
IMWITOR® 900 K	Glyceryl Stearate	2.0	2.0
MIGLYOL® Coco 810	Coco Caprylate/Caprate	–	10.0
Cyclopentasiloxane	Cyclopentasiloxane	10.0	–
WITARIX® MCT 60/40	Caprylic/Capric Triglycerides	10.0	10.0
Cetearyl Alcohol	Cetearyl Alcohol	1.0	1.0
Keltrol® F	Xanthan Gum	0.3	0.3
Phenonip®	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben	0.7	0.7
Glycerin 99,5%	Glycerin	5.0	5.0
Aqua dem.	Aqua	68.0	68.0
Sodium hydroxide 10% in water	Sodium Hydroxide	q.s.	q.s.

Results of comparison of MIGLYOL® Coco 810 with Cyclomethicone D5 in O/W cream

The biggest differences are seen for the absorption of the cream and film forming effect. The spreadability and soaping of the two creams have a very similar rating and the smoothening effect is seen as identical by the test panel. Significant differences are that cream A (with Cyclomethicone) shows very fast absorption and low substantivity/film forming effect compared to cream B (containing MIGLYOL® Coco 810). The general rating of the sensorial quality is better for cream B, apparently because of a better film forming effect that is responsible for the long-lasting care effect of this formulation. Due to the different properties of our light emollients, the products has a broad range of application in different segments of personal care products.



FORMULATIONS

Light Day Cream No. 650

Phase	Tradename	INCI	%
A	Glycerin 99,5%	Glycerin	3.0
A	Phenonip® XB	Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben	0.7
A	Disodium EDTA	Disodium EDTA	0.05
A	Aqua dem.	Aqua	ad 100.0
B	UltraThix™ P-100 polymer	Acrylic Acid/ VP Crosspolymer	0.5
C	Sodium hydroxide 10% in water	Sodium Hydroxide	1.0
C	Aqua dem.	Aqua	5.0
D	IMWITOR® 375	Glyceryl Citrate/Lactate Oleate/Linoleate	
D	MIGLYOL® Coco 810	Coco Caprylate/Caprate	5.0
D	MIGLYOL® 8810	Butylene Glycol Dicaprylate/Dicaprate	5.0
D	MIGLYOL® OE	Simmondsia Chinensis Seed Oil, (and) Oleyl Erucate	1.0
D	Tocopherol	Tocopherol	0.5
E	Fragrance	Parfum (EU)/Fragrance (US)	q.s.
F	RapiThix™ A-60 polymer	Sodium Polyacrylate (and) Hydrogenated Polydecene (and) Trideceth-6	1.0

Preparation

Prepare this formulation at room temperature

1. Mix all materials of Phase A together
2. Add 1/2 of premixed phase C to phase A by stirring
3. Add phase B to phase A and homogenize
4. Premix phase D until uniform
5. Add phase D to phase A/B/C
6. Homogenize
7. Add phase E to the emulsion
8. Add remaining phase C to the emulsion
9. Homogenize
10. Add phase F to the emulsion and mix well

Supplier

IOI Oleo GmbH: IMWITOR®, MIGLYOL®
Ashland: UltraThix™, RapiThix™
Clariant: Phenonip®

Specification

Viscosity at 20 °C, 7 days after production:
Shearate 10/s: 9,500–13,000 mPas
(Malvern Kinexus Cone/Plate 4°/40 mm (CP4/40))
Stability: 20 °C/3 month: pass // 40 °C/3 month: pass // 50 °C/1 week : pass
pH: ≈ 6.0 | Appearance: white

Sprayable Body Oil No. 721

Phase	Tradename	INCI	%
A	MIGLYOL® 829	Caprylic/Capric/ Succinic Triglyceride	4.0
A	MIGLYOL® Coco 810	Coco Caprylate/Caprate	40.5
A	MIGLYOL® PPG 810	Propylene Glycol Dicaprylate/Dicaprate	25.0
A	Tegosoft® HP	Isohexyl Palmitate Succinic Triglyceride	5.0
A	WITARIX® MCT 60/40	Caprylic/Capric Triglyceride	24.0
A	Baobab Oil	Adansonia Digitata Seed Oil	2.0
A	Barbary Fig Oil	Opuntia Ficus-Indica Seed Oil	0.5
A	Argan Oil	Argania Spinosa Kernel Oil	1.0
A	Tocopherol	Tocopherol	0.4
A	Fragrance	Parfum (EU) / Fragrance (US)	q.s.

Preparation

Put all ingredients together and stirr at room temperature until homogenous.

Supplier

IOI Oleo GmbH: MIGLYOL®, SOFTIGEN®, WITARIX®
Evonik Nutrition & Care GmbH: Tegosoft®

Specification

Appearance: Slightly yellow, clear

IOI Oleo GmbH

Hamburg, Germany | T: +49 40 28 00 31-0 | E: personalcare@ioioleo.de | W: www.ioioleo.de