SCHOOL of NATURAL SKINCARE International

5.3 FORMULATING CREAM CONCEALER

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In this lesson, we will cover:

1. **How to formulate cream concealer.**
2. **Examples on the market.**
3. **Formulation template for cream concealer.**
4. **Formulation example for cream concealer.**
5. **Adjusting the formula.**

HOW TO FORMULATE CREAM CONCEALER

Cream concealers are normally formulated as highly pigmented **emulsions**, which can be either W/O or O/W emulsions, though most commonly O/W emulsions are used, as matte pigments disperse more easily in this formula type. Our example formula is a W/O emulsion, therefore it is a more advanced and complex formula than a typical O/W emulsion.

Conventional cream concealers are usually emulsions made with silicones and water, but natural versions use oils (or other emollients) and water. They can be packaged in various different containers, eg jars, squeeze tubes, lip-gloss tubes with a wand applicator.

Formulating cream concealer is very similar to formulating foundations. Both products are emulsions with a different amount of pigments. Natural cream concealers contain light emollients, emulsifiers, a water phase, preservatives and often dispersants.

Emollients act as the main carrier in which the pigments are dispersed. Typically, very light and quick to absorb emollients are used, so they do not feel greasy on the skin. Lightweight vegetable oils or even lighter esters are a great option.

The water phase contains water and water-soluble ingredients. In an emulsion, the water phase makes the product lighter and easier to dry/absorb, which is an important property of a concealer, as the user normally expects it to dry in a fairly short period of time after application.

Since matte pigments usually disperse much better in the oil phase, most of the cream concealers on the market are in the form of a water-in-oil emulsion.

Since concealers contain a high percentage of matte mineral pigments, they often also contain dispersing aids, which ensure the pigments are evenly dispersed throughout a formula.

Since matte pigments usually disperse much better in the oil phase, most of the cream concealers on the market are in the form of a water-in-oil emulsion, just like our example formula. This means that the emulsifier included in the formula needs to be a W/O (water-in-oil) type of emulsifier.

Our example formula is packaged into a lip gloss tube – this packaging is fairly standard for cream concealers as it allows for precise application using the applicator wand.

Because cream concealers are emulsions, they require a broad-spectrum preservative system.

Cream concealers are applied onto the skin with the applicator wand and then blended using fingertips, cosmetic brushes or makeup sponges.

EXAMPLES ON THE MARKET

MADARA THE CONCEALER
€20 per 4ml
www.madaracosmetics.com

Product highlights/description:
"Meet the never seen before concealer. This natural certified concealer hides dark circles, blemishes and redness yet mystically remains unseen. The dewy finish and long-lasting comfortable wear is powered by hydrating hyaluronic acid and smart retouching minerals. Use to conceal any imperfections and illuminate the eye area. Apply with a brush, blend well with fingers."

INCI: Aloe Barbadensis (Aloe) Leaf Juice, Dicaprylyl Carbonate, Butylene Glycol, Butyrospermum Parkii (Shea Butter) Fruit Butter, Polyglyceryl-3 Polyricinoleate, Oryza Sativa (Rice) Powder, Oryza Sativa (Rice) Bran Oil, Helianthus Annuus (Sunflower) Seed Wax, Glycerin, Sodium PCA, Sodium Chloride, Xanthan Gum, Sodium Dehydroacetate, Lactic Acid, Glycolipids, Hydrolyzed Hyaluronic Acid, Sodium Hyaluronate, Ascorbyl Palmitate, Tocopherol, Paeonia Lactiflora (Peonia) Root Extract, Vaccinium Myrtillus (Blueberry) Fruit Extract, Titanium Dioxide (CI 77891), Mica (CI 77019), CI 77492 (Iron oxide), CI 77499 (Iron Oxide), CI 77288 (Iron Oxide), CI 77681 (Tin Oxide).

Our analysis:
This cream concealer is a W/O type of emulsion, which can be seen because of the emulsifier used – polyglyceryl-3 polyricinoleate. It uses aloe vera juice as the main solvent in the water phase, together with multifunctional humectant butylene glycol, sodium PCA and salt as the stabilizer. The oil phase consists of a light hydrocarbon emollient, dicaprylyl carbonate (trade name Cetiol CC), shea butter, rice bran oil and sunflower oil. The product contains botanical extracts (peonia and blueberry) for skin benefits, as well as hyaluronic acid as a strong humectant. The concealer is preserved with sodium dehydroacetate and uses lactic acid as the pH adjuster. Pigments used in this product include titanium dioxide, iron oxides, mica and tin oxide. For a drier, silkier skin finish the concealer also contains rice powder.

INIKA ORGANIC SHEER COVERAGE CONCEALER

£25 per 10ml

https://uk.inikaorganic.com

Product highlights/description:

"Say goodbye to blemishes, dark circles, redness and pigmentation with this Natural and Organic liquid concealer. The hydrating formula disguises imperfections without creasing or caking, while nourishing skin with botanical extracts. Balancing and vitamin E-rich jojoba seed oil combines with soothing, restorative antioxidant aloe vera and green tea extract, plus moisturising shea butter, to leave skin radiant and flawless. housed in a sustainable sugarcane derived recyclable bio-resin tube, the INIKA Organic Sheer Coverage Concealer evens out skin tone and brightens the complexion with pure, light-reflecting minerals, hiding signs of ageing and tiredness."

INCI: Aloe Barbadensis (Aloe Vera) Leaf Juice, Titanium Dioxide, Persea Gratissima (Avocado) Oil, Simmondsia Chinensis (Jojoba) Seed Oil, Glyceryl Stearate Citrate, Cetearyl Alcohol, Cetearyl Olivate, Glycerin, Aqua (Water), Butyrospermum Parkii (Shea) Butter, Sorbitan Olivate, Theobroma Cacao (Cocoa) Seed Butter, Sodium Levulinate, Lecithin (Soya), Cocos Nucifera (Coconut) Oil, Tocopherol (Vitamin E), Glyceryl Caprylate, Camellia Sinensis (Green Tea) Leaf Extract, Terminalia Ferdinandiana (Kakadu Plum) Fruit Extract, Cananga Odorata (Ylang Ylang) Flower Oil, Pelargonium Roseum/ Graveolens (Geranium) Leaf Oil, Cymbopogon Martini (Palmarosa) Oil, Lavandula Angustifolia (Lavender) Oil, Calophyllum Inophyllum (Tamanu) Seed Oil, Glycerin, Cetearyl Glucoside, Sodium Anisate, Lactic Acid, Geraniol, Linalool, Citronellol, Benzyl Benzoate, Isoeugenol, Benzyl Salicylate, Farnesol, Eugenol, Citral. May contain +/- Iron Oxides (CI 77491, CI 77492, CI 77499).

Our analysis:

This concealer is also an emulsion, but an O/W type of emulsion that probably uses two commercial emulsifiers – Symbiomuls GC (INCI: Glyceryl Stearate Citrate (and) Cetearyl Alcohol (and) Glyceryl Caprylate) and Olivem 1000 (INCI: Cetearyl Olivate (and) Sorbitan Olivate) as well as lecithin. The water phase consists of aloe vera juice, water and glycerin. The oil phase contains a blend of vegetable oils (avocado oil, jojoba oil, shea butter, cocoa butter, coconut oil and tamanu oil). The product also contains botanical extracts (green tea, kakadu plum) and an essential oil blend (ylang ylang, geranium, palmarosa, lavender). The concealer is preserved with sodium levulinate and sodium anisate (found in commercial blend Dermosoft 1388) plus glyceryl caprylate as a booster, and uses lactic acid as a pH adjuster. The pigments that provide coverage and color in this concealer are titanium dioxide and iron oxides.

ILIA TRUE SKIN SERUM CONCEALER

$30 per 5ml

https://iliabeauty.com

Product highlights/description:

"A clean, medium-coverage concealer with skincare benefits and a featherweight texture that blends seamlessly into skin. ILIA True Skin Serum Concealer blends in with a creamy, creaseless stretch to instantly reduce the appearance of dark circles, discoloration, and blemishes. Stabilized vitamin C, mastic, and albizia julibrissin bark extract promote brighter, smoother, and more even skin while helping to protect against environmental stressors."

INCI: Aloe Barbadensis Leaf Juice, Tetradecane, Hydrogenated Polydecene, Glycerin, Disteardimonium Hectorite, Polyglyceryl-3 Diisostearate, Decyl Isostearate, Isostearyl Isostearate, Isostearic Acid, Silica, Propanediol, Sorbitan Sesquiisostearate, Polyglyceryl-6 Polyricinoleate, Gluconolactone, Lauroyl Lysine, Albizia Julibrissin Bark Extract, Magnesium Sulfate, Sodium Chloride, Zinc Stearate, Hydrogenated Lecithin, Tetrahexyldecyl Ascorbate, Sodium Benzoate, Dodecane, Caprylic/Capric Triglyceride, Hexadecane, Pistacia Lentiscus (Mastic) Gum, Calcium Gluconate, Ethylhexylglycerin, Darutoside, Phenethyl Alcohol. May contain +/- CI 77891 (Titanium Dioxide), CI 77491, CI 77492, CI 77499 (Iron Oxides).

Our analysis:

This concealer is another example of a W/O emulsion. It contains a blend of three W/O emulsifiers – polyglyceryl-3 diisostearate, polyglyceryl-6 polyricinoleate and sorbitan sesquiisostearate. The emollients in the oil phase are innovative, naturally derived substitutes for silicones – decyl isostearate and isostearyl isostearate (trade name Crodamol SSA), hydrogenated polydecene and tetradecane. Disteardimonium hectorite is a derivative of hectorite clay and functions as a lipid thickener and emulsion stabilizer. Silica in the formula functions in a similar way. The oil phase contains another thickener and stabilizer for W/O emulsions – a stearate salt, in this case zinc stearate. The water phase consists of aloe vera juice, glycerin and propanediol, which functions as a humectant and preservative booster. Emulsion stabilizers in the water phase are two salts – magnesium sulfate and sodium chloride. The concealer is preserved with a mixture of ethylhexylglycerin, sodium benzoate and phenethyl alcohol, and uses gluconolactone as a chelator and preservative booster (likely as a component of the Geogard Ultra preservative blend). The product contains lauroyl lysine for a silky finish and skin feel, as well as other skin beneficial ingredients – two botanical extracts and a stabilized version of Vitamin C (tetrahexyldecyl ascorbate). The pigments which give the concealer its main coverage and color properties are titanium dioxide and iron oxides.

FORMULATION TEMPLATE FOR CREAM CONCEALER

Let us have a look at a formulation for cream concealer. We will start with the formulation template.

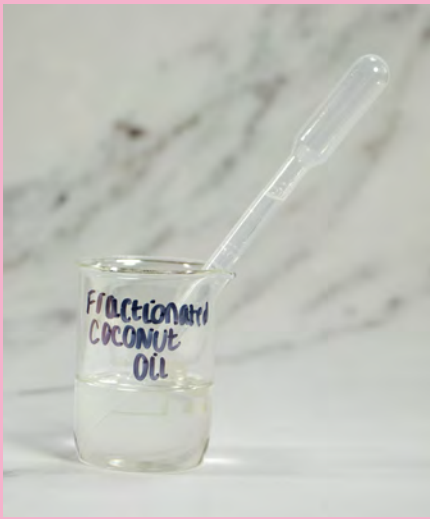
Ingredient type	Function	w/w%
Emollients (eg oils, butters, esters)	Solvent	10-60
Lipid thickeners (eg waxes, fatty alcohols, silica, etc)	Increases viscosity	1-10
Emulsifier	Combines oils and water	3-10
Purified water (deionized), or hydrosols, aloe vera juice	Solvent	30-60
Stabilizers for W/O emulsion (eg magnesium chloride) – if needed	Stabilizes W/O emulsions	0-1
Water-phase thickeners (eg gums)	Increases viscosity	0-3
Humectants – optional	Moisturizes the skin	Up to 3
Pigment mixture	Provides tint/color	Up to 25
Dry powders (eg starch, clay) – optional	Creates a dry skin feel	Up to 5
Dispersant – optional	Eases pigment dispersion	Up to 2
Film-formers (eg acacia gum)	Provides longevity	Up to 10
Fragrance/essential oils – optional	Masking agent for raw materials	Up to 1
Preservative	Prevents spoilage via microbial growth	q.s.*
Antioxidant (eg Vitamin E)	Prevents oxidation	0.05-0.10

*The abbreviation q.s. stands for 'quantum satis' or 'quantum sufficit', meaning an amount which is enough, or an amount which suffices. This is a term used in template formulas because the amount of preservative depends on the preservative itself and the formula.

This template can be used for either a W/O or O/W cream concealer. We have provided two different **Product Development Briefs** and **Formulation Worksheets** (one for W/O emulsions and one for O/W emulsions) where you can find guidance specific to each type of emulsion.

It is worth noting that W/O emulsions are an advanced emulsion type. This means that when formulating your own cream concealer you may wish to begin with an O/W emulsion, which you are probably already familiar with.

When you are ready to formulate your own W/O cream concealer we recommend studying our Formulating Water-in-Oil (W/O) Emulsions class, which provides more detailed guidance on this advanced formula type.



FORMULATION EXAMPLE FOR CREAM CONCEALER

PRODUCT DEVELOPMENT QUESTIONS

Product type:
Cream concealer (W/O emulsion).

Are you formulating to meet a particular standard or certification?
We are using natural ingredients, accepted by COSMOS.

Who is your target audience?
People of all ages, looking for a natural concealer.

What is the purpose/function of your product?
To provide coverage for blemishes and other imperfections.

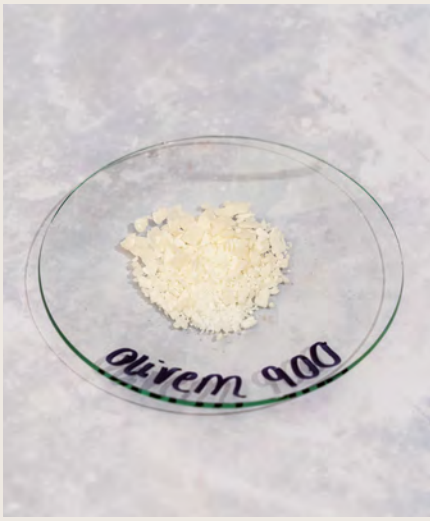
What properties and qualities do you want your product to have?
Medium viscosity, creamy emulsion. High pigmentation, light skin feel.

What packaging will your product go in?
10ml lip balm tube with a wand applicator.

Which solvents are you using and why?
Purified water (deionized), as it is easily accessible and easy to use.

Which water thickeners are you using and why?
Since this is a W/O emulsion we are not using any water-phase thickeners. Instead, we have added salt as the water-phase stabilizer to help stabilize this W/O emulsion.

Which humectants are you using and why (if any)?
We are using glycerin to moisturize the skin.

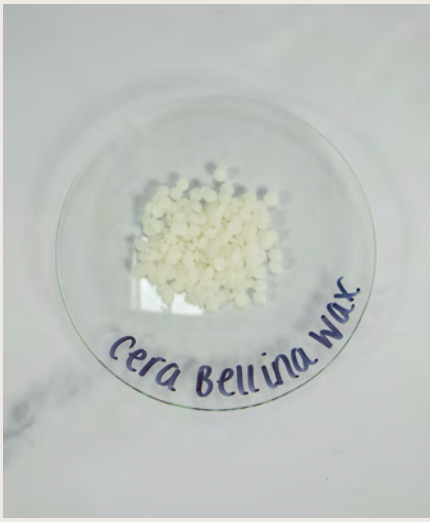


Which emollients are you using and why?
We included liquid emollients that have a very light, non-greasy skin feel – fractionated coconut oil, squalane, jojoba oil, isoamyl laurate.

Which lipid thickeners are you using and why?
We are using cera bellina and Olivem 900 – they both work as thickeners and emulsion stabilizers. We are also using magnesium stearate which gels the oils and helps to stabilize the emulsion.

Which emulsifiers are you using and why?
We are using polyglyceryl-3 polyricinoleate, because it is a naturally derived and reliable W/O emulsifier. Other W/O emulsifiers can also be used instead. Olivem 900 functions as a co-emulsifier and stabilizer.

Which pigments are you using and why?
We are using a blend of matte mineral pigments.



Which other ingredients specific to this product type are you using and why?
We are using polyhydroxystearic acid as a dispersant – it helps in preventing mineral pigments from clumping up. Refer to **Lesson 5.1 Introduction to formulating natural concealer and foundation** for more information on, and suppliers of, polyhydroxystearic acid.

We are also using glyceryl oleate as an emulsion stabilizer. In the water phase, we added magnesium chloride to further stabilize the emulsion.

We are including Vitamin E as an antioxidant and Geogard 221 as a preservative.

FORMULA

Phase	INCI name	Trade name	Function	w/w%
A1	Caprylic/Capric Triglyceride	Fractionated coconut oil	Solvent, carrier, emollient	9.0
A1	Squalane	Squalane	Solvent, carrier, emollient	2.0
A1	Magnesium Stearate	Magnesium stearate	Stabilizer	1.0
A	Simmondsia Chinensis Seed Oil	Jojoba oil	Solvent, carrier, emollient	5.0
A	Isoamyl Laurate	Dermofeel Sensolv	Solvent, carrier, emollient	3.0
A	Polyhydroxystearic Acid	Polyhydroxystearic acid	Dispersant	1.0
A	Various	Pigment mixture	Colorant	20.0
B	Polyglyceryl-3 Polyricinoleate	Emul PGPR	Emulsifier	4.5
B	Sorbitan Olivate	Olivem 900	Co-emulsifier	1.5
B	Polyglycerol-3 Beeswax	Cera bellina	Thickener, stabilizer	0.5
B	Glyceryl Oleate	Glyceryl oleate	Thickener	0.5
C	Aqua	Purified water (deionized)	Solvent, carrier	48.1
C	Glycerin	Glycerin	Humectant	2.0
C	Magnesium Chloride	Magnesium chloride	Stabilizer	1.0
D	Tocopherol	Vitamin E (95% mixed tocopherol)	Antioxidant	0.1
D	Benzyl Alcohol, Dehydroacetic Acid	Geogard 221	Preservative	0.8

INSTRUCTIONS

1. Prepare your pigment mixture.
2. Mix phase A1 ingredients and heat directly on a hot plate until the powder melts and dissolves in the oils, at approximately 100°C.
3. Add phase A ingredients to phase A1, blend and mix until pigments are dispersed.
4. Add phase B ingredients to phase A.
5. Heat phase A+B to 75°C using a water bath or hot plate.
6. In a separate beaker, combine phase C ingredients and mix until dissolved.
7. Adjust the pH of phase C to between 4.5 and 5.5.
8. Weigh the phase C beaker. Record this weight to be used for water loss calculations later. Alternatively, you can cover the beaker with plastic wrap or a silicone cover to prevent evaporation.
9. Heat phase C to 75°C using a water bath or hot plate.
10. Once both phases are at the required temperature, remove phase C from the heat. If the beaker was not covered, weigh this beaker and calculate the difference between this weight and the initial weight. This value represents water lost through evaporation. Add this amount of purified water lost back into the beaker.
11. Very slowly, while constantly stirring, add phase C into phase A+B. When doing this, ensure each addition of the water phase is completely blended in the oil phase.
12. Using a stick (immersion) blender, briefly homogenize for a couple of seconds to achieve an homogenous emulsion.
13. Cool the mixture to 45°C, stirring occasionally to help the batch cool consistently.
14. Add phase D ingredients. Mix thoroughly.
15. Pour into a lip gloss tube. If the mixture is not fluid enough for pouring, use a disposable syringe to fill the tube.
16. Allow to cool at room temperature.

PRODUCT SPECIFICATIONS

Appearance: Opaque emulsion in tube.

Viscosity: Medium viscosity emulsion.

Color: Various.

Odor: Not noticeable.

pH: 4.5-5.5. The pH of our product was 7.1, which we adjusted to 4.5 using 0.04g of a 30% citric acid solution.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ADJUSTING THE FORMULA

Using different types of emollients and thickeners will create different structures and skin feel. As this is a W/O emulsion, the emulsifier can be substituted with other W/O emulsifiers. For suppliers and substitution ideas refer to **Lesson 5.1 Introduction to formulating natural concealer and foundation**.

Due to the high percentage of pigments, the emulsion can be unstable, so it requires emulsion stabilizers – both in the oil phase and in the water phase. Changing any of the stabilizers (magnesium stearate, cera bellina, Olivem 900, glyceryl oleate) could decrease the emulsion stability. Instead of magnesium chloride, other salts can be used, eg magnesium sulfate or sodium chloride.

PET RESULTS

This product passed Preservative Efficacy Testing with a Criteria A pass. The results can be found on the following page.

SUMMARY

In this lesson, we explained how to formulate cream concealer. We shared examples of natural cream concealers on the market and provided a formulation template and an example formula for cream concealer.

PET RESULTS

HAMILTON

ANNEX NO. 1 TO THE TEST REPORT NO L65148/22/JSHS

RESULTS

Microorganisms	Log reduction					
	T 7	criteria	T 14	criteria	T28	criteria
Escherichia coli	**4,96**	≥ 3	**4,96**	≥ 3 and NI	**4,96**	≥ 3 and NI
Staphylococcus aureus	**4,59**	≥ 3	**4,59**	≥ 3 and NI	**4,59**	≥ 3 and NI
Pseudomonas aeruginosa	**4,93**	≥ 3	**4,93**	≥ 3 and NI	**4,93**	≥ 3 and NI
Candida albicans	**3,95**	≥ 1	**3,95**	≥ 1 and NI	**3,95**	≥ 1 and NI
Aspergillus brasiliensis	**1,46**	-	**1,44**	≥ 0	**2,26**	≥ 1 and NI

$Rx = lg\ N_0 - lgNx$

N_0- number of micro-organisms inoculated at time t_0

Nx- number of surviving micro-organisms at each sampling time t_x

NI- no increase in the count from the previous contact time T7,T14,T28 days

Conclusion: The test confirmed the efficacy of the antimicrobial protection of a cosmetic product. The product meets criteria A.

Annex date: 02.08.2022