



ALCHEMY

ingredients

SUCRAGEL®
AS AN EMULSIFIER

SUCRAGEL® IN EMULSIONS

Sucragel® can be used in standard emulsions to make stable formulations with the addition of a few ingredients.

The recommended procedure is:

Make an oily gel using the standard method, using the oil phase required in the emulsion.



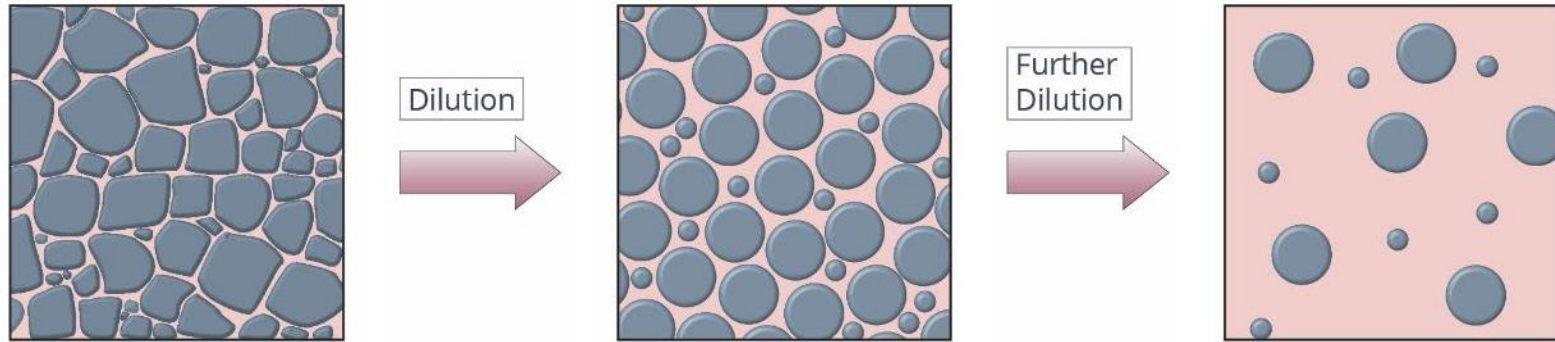
Prepare the external (diluting) phase, mainly water plus a stabiliser of your choice e.g. Sucrathix VX



Combine the 2 phases and homogenise.



SUCRAGEL[®] GELS: PROCESS OF DILUTION



The external phase is diluted when water is added. Oil droplets change shape from polygonal to spherical but retain their small size leading to a fine emulsion. The emulsion can be diluted using any amount of water.



WHICH GRADE TO USE?

In theory, **any grade** of Sucragel® is suitable.

However, **Sucragel® AP V2** would be a good choice:

- Simple INCI
- Functional delivery of Sucrose Esters
- Cost Effective

If better stability is seen in the formulation with Sucrablend added, Sucragel® XL would be a good choice as Sucrablend is already included. Sucrablend will need to be used if storing the gel.



SUCRAGEL®: MAKING AN EMULSION

A SIMPLE TYPICAL FORMULA

PHASE A (Gel Phase)¹

Sucragel®
Oil (Veg Oil, ester, silicone)

Overall %

2-5%

10-20%

PHASE B (Water Phase)

Water
Glycerine (Optional)
Stabiliser²

Overall %

70-90%

1-5%

0.5-2%

¹Ratio of approximately 1:5 Sucragel® to oil required.

²Stabiliser is required to prevent separation of the formula and can also be used to regulate viscosity.

SUCRAGEL®: MAKING AN EMULSION

STEP 1



Make up gel phase using the appropriate ratio of oil to Sucragel®. Heat can be used if butters or waxes present.

STEP 2



Prepare the water phase, heating if required.

STEP 3



Mixing of the 2 phases can be carried out at room temperature, although it may be preferable to carry it out while still hot.

STEP 6



If stable, the gel phase can be stored until needed.

STEP 5



A fine emulsion should result.

STEP 4



Homogenise phases together (ideally). Alternatively, a high speed on an overhead mixer can be used.



FORMULATION TIPS

Fatty Alcohols and Glyceryl Stearate can be added to give extra viscosity and body to the formulation – treat as a wax (in oil phase).

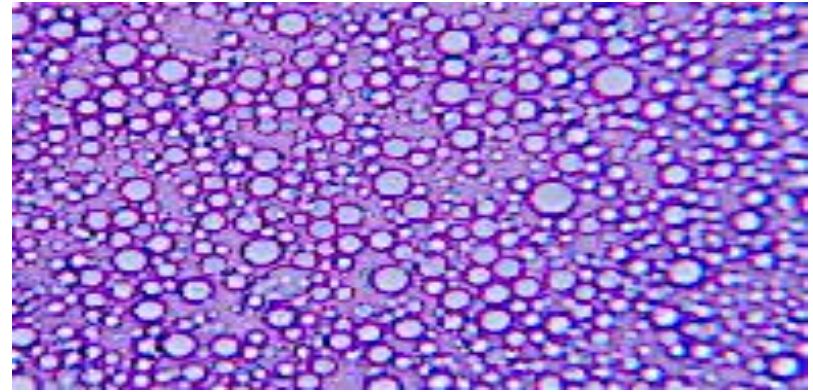
Stabiliser needs to have some suspension properties in order to keep the droplets apart: Sucrathix VX is ideal.

In general, the resulting emulsion will have the viscosity of the water phase (Sucragel® does not add viscosity to the system).

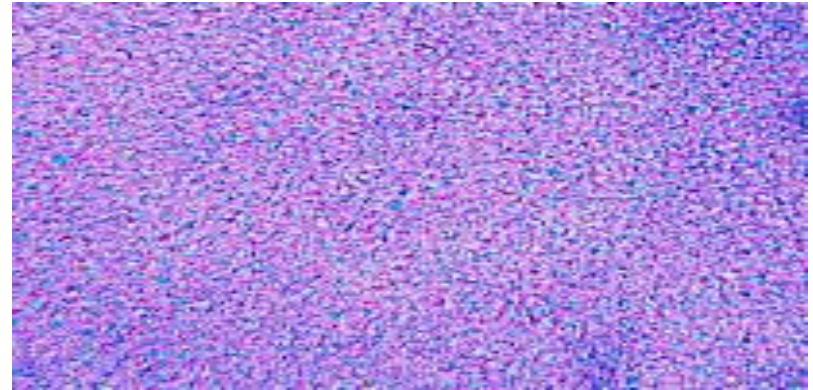
DROPLET SIZE

Typical Droplet size when made
via gel intermediate is <300nm:
Mini or Nano Emulsion

Small droplet size =
coalescence is minimised



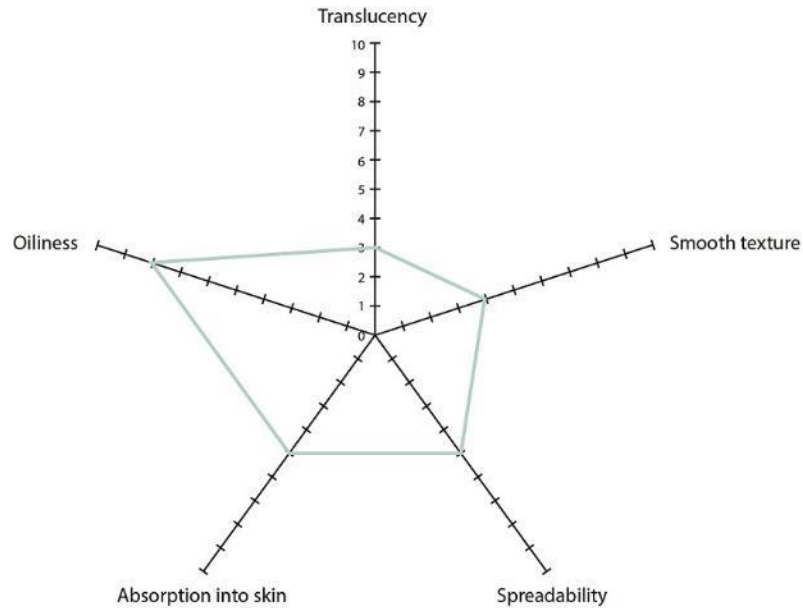
Emulsion via a **standard** process....



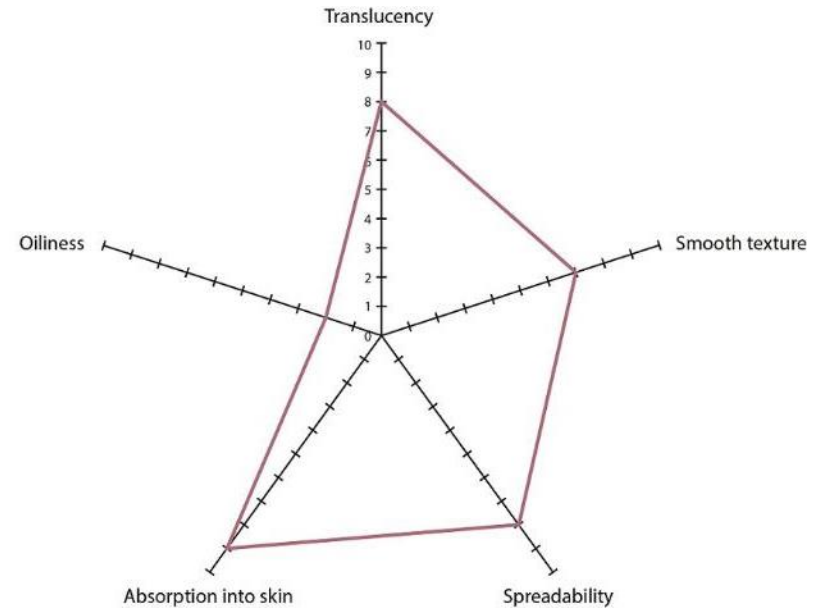
Same emulsion made **via an oily gel intermediate**.....

SENSORY ANALYSIS

A panel was asked to assess 2 creams and score them.



Emulsion made with Sucragel® as a standard emulsifier



Emulsion via gel



USING SUCRAGEL® TO MAKE HIGH BUTTER FORMULATIONS

It is possible to make a sprayable emulsion containing a high level of butters.

The procedure for making these is the same as other emulsions, care needs to be taken to ensure the butters are in liquid form before incorporating them into Sucragel®.

Once the gel has been formed, it can be diluted at room temperature.

USING SUCRAGEL® IN SUNCARE

By gelling organic sun filters, the concept of a microfine emulsion can be used to achieve a high SPF of a product and also improve its texture and stability.

Basic concept:

1. Mix together sun filters and any other oily components of the formulation.
2. Using a ratio of approximately 1 part Sucragel® to 4 parts oil, make a stable thick gel.
3. Dilute the gel to the appropriate concentration of oil/sun filters to achieve required SPF.



SPRAYABLE SUNCARE: WHY?

Many consumers prefer sprayable suncare products!

Convenience

- Single step application, just spray directly to skin.
- Easier to reach difficult parts of the body.
- No waste, just spray exactly what you need.

Skin feel and texture

- No greasy feel
- Easily rubbed in, no white residue
- Use of Sucrathix VX gives 'no run' formula



TESTING SUNCARE FORMULATIONS

- Medium SPF (25+)
- High SPF (50+)

Using known combinations of permitted sun filters within the allowed limits, two formulations were developed to show that high SPFs are possible with this type of formula and that the measured SPF reached or exceeded the predicted SPF.

Formulations were tested *in vitro* using an external testing house (HelioScreen, France) using a Labsphere UV-2000 machine by conducting multiple sweeps, with an average taken.



SUN SPRAY SPF 25+

Phase	Ingredient	INCI designation	% w/w
A	Sucragel® AP V2	Glycerine & Aqua & Sucrose Laurate	5.0
B	Escalol 517	Butyl Methoxydibenzoylmethane	3.0
B	Escalol 597	Octocrylene	4.0
B	Neo Heliopan HMS	Homosalate	8.0
B	Neo Heliopan HMS	Ethylhexyl Salicylate	5.0
B	Cosmacol EBL	C12-15 Alkyl Benzoate	5.0
B	Caprylic/Capric Triglyceride	Caprylic/Capric Triglyceride	2.0
C	Water	Aqua	66.0
C	Sucrathix VX	Microcrystalline Cellulose, Cellulose Gum, Xanthan Gum	1.0
D	Euxyl® PE9010	Phenoxyethanol & Ethylhexylglycerin	1.0

APPEARANCE:

White thin liquid

MANUFACTURING PROCESS:

1. Weigh Sucragel AP V2 out in a beaker. In a separate beaker weigh Phase B out and heat until liquid.
2. Slowly, add Phase B into the Sucragel® under propeller mixing at medium speed to form a gel. Prepare Phase C and then add to gel phase under homogenization. Add Phase D.

MEASURED SPF (LABSPHERE IN VITRO): 29.0 (Predictor Tool 16.3)

SUN SPRAY SPF 50+

Phase	Ingredient	INCI designation	% w/w
A	Sucragel® AP V2	Glycerine & Aqua & Sucrose Laurate	5.0
B	Escalol 517	Butyl Methoxydibenzoylmethane	3.0
B	Escalol 597	Octocrylene	10.0
B	Neo Heliopan HMS	Homosalate	8.0
B	Neo Heliopan HMS	Ethylhexyl Salicylate	5.0
B	Cosmacol EBL	C12-15 Alkyl Benzoate	7.0
C	Water	Aqua	55.0
C	Sucrathix VX	Microcrystalline Cellulose, Cellulose Gum, Xanthan Gum	1.0
D	Euxyl® PE9010	Phenoxyethanol & Ethylhexylglycerin	1.0

APPEARANCE:

White thin liquid

MANUFACTURING PROCESS:

1. Weigh Sucragel AP V2 out in a beaker. In a separate beaker weigh Phase B out and heat until liquid.
2. Slowly, add Phase B into the Sucragel® under propeller mixing at medium speed to form a gel. Prepare Phase C and then add to gel phase under homogenization. Add Phase D.

MEASURED SPF (LABSPHERE IN VITRO): 70.7 (Predictor Tool 24.4)



SUMMARY

Sprayable stable suncare formulations are possible using this combination of ingredients.

Mild ingredients suitable for sensitive skin.

All known permitted organic sun filters can be used and stabilised in this system.

The product feels light, spreads easily and does not whiten skin.

A very high SPF (70+) is achievable due to high oil loading and small particle size.

FORMULAS AVAILABLE



Curl Reviving
Pudding

Anti-aging
Rejuvenating
Serum

Butter
Mist

CURL REVIVING PUDDING

Phase	Trade Name	INCI name	% w/w	Supplier
A	Sucragel® AP V2	Glycerin, Aqua, Sucrose Laurate	5.00	Alchemy Ingredients
A	Sucrablend SP V2	Sucrose Stearate, Sucrose Palmitate	0.10	Alchemy Ingredients
B	Cetiol® C5C	Coco-caprylate/Caprate	20.00	BASF
C	Sucrathix VX	Microcrystalline Cellulose, Cellulose Gum, Xanthan Gum	3.00	Alchemy Ingredients
C	Water	Aqua	65.60	
C	Glycerin	Glycerin	1.50	
D	Wavemax	<i>Linum usitatissimum</i> (Linseed) Seed Extract, Salvia Hispanica Seed Extract	2.00	Chemyunion
D	Kera plant NPNF™	Water, Hydrolyzed Wheat Protein, Hydrolyzed Soy Protein, Hydrolyzed Corn Protein	0.70	Tri-K Industries, Inc.
D	Fision AquaShield	See Datasheet	0.70	
D	Fragrance 'Coco and Lemongrass'	Parfum	0.40	
D	Euxyl® PE9010	Phenoxyethanol, Ethylhexylglycerin	1.00	Schülke & Mayr

ANTI-AGING REJUVENATING SERUM

Phase	Ingredient	INCI name	%w/w	Supplier
A	Sucragel XL	Glycerin, Caprylic/Capric Triglycerides, Aqua, Sucrose Laurate, Sucrose Stearate	8.0	Alchemy Ingredients
B	Cetiol C5C	Coco-Caprylate/Caprate	15.0	BASF
B	Isostearyl Isostearate	Isostearyl Isostearate	5.0	Gattefossé
B	Shea Butter	Butyrospermum Parkii (Shea) Butter	3.0	
B	Hemp Seed Oil	Cannabis Sativa (Hemp) Seed Oil	0.5	Biolie
C	Sucrathix VX	Microcrystalline Cellulose, Cellulose Gum, Xanthan Gum	2.0	Alchemy Ingredients
C	Water	Aqua	65.1	
D	IBR Dormin Organic 0306	Glycerin, Aqua, Narcissus Tazetta Bulb Extract	0.3	IBR
D	Skin Blitz	Aqua, Salvia Hispanica Seed Extract, Trehalose, Galactoarabinan, Glycerin, Xylitol, Sodium Phosphate, Sorbitol	0.5	Chemyunion
D	Fragrance "Beauty"	Parfum	0.1	

BUTTER MIST

Phase	Ingredient	INCI Name	%w/w	Supplier
A	Sucragel® CF	Glycerine, Caprylic/Capric Triglycerides, Aqua, Sucrose Laurate	8.00	Alchemy Ingredients
B	Shea Butter	Butyrospermum parkii (Shea) Butter	15.00	-
B	Caprylic/Capric Triglyceride	Caprylic/Capric Triglyceride	7.40	-
C	Water	Aqua	65.40	
C	Sucrathix VX	Microcrystalline Cellulose, Cellulose Gum, Xanthan Gum	0.60	Alchemy Ingredients
D	Dermosoft® 1388 ECO	Glycerine, Aqua, Sodium Levulinate, Sodium Anisate	3.50	Dr. Straetmans
D	Dermofeel® PA-3	Sodium Phytate, Aqua	0.10	Dr. Straetmans
D	Citric Acid (10% solution)	Citric Acid	Adjust to pH 4.5-5.5	-