ALCHEMY
ingredients

SAPOGEL® Q

Palm Free Balm Textures

SAPOGEL® Q: AN ALTERNATIVE TO USING WAXES IN BALMS

Most balms are structured using waxes combined with oils.

Sapogel® Q balms obtain their structure from saponins forming an oil and glycerine/water layered system, giving a similar appearance and skin-feel to waxy balms, without the disadvantages.

ADVANTAGES:

- No drag from the wax in the formulation
- No heating of the formulation to high temperatures which can help protect the oil
- Easy cleaning of the vessel
- An ability to add water or oil soluble components

SAPOGEL® Q: WHAT IS IT?

INCI: Glycerine, Aqua, *Quillaja saponaria* Wood Extract, *Saponaria officinalis* Leaf/ Root Extract

Sapogel® Q is a liquid blend that allows the formulator to make stable, translucent, rich balms with the texture of lanolin or petroleum jelly.

FEATURES:

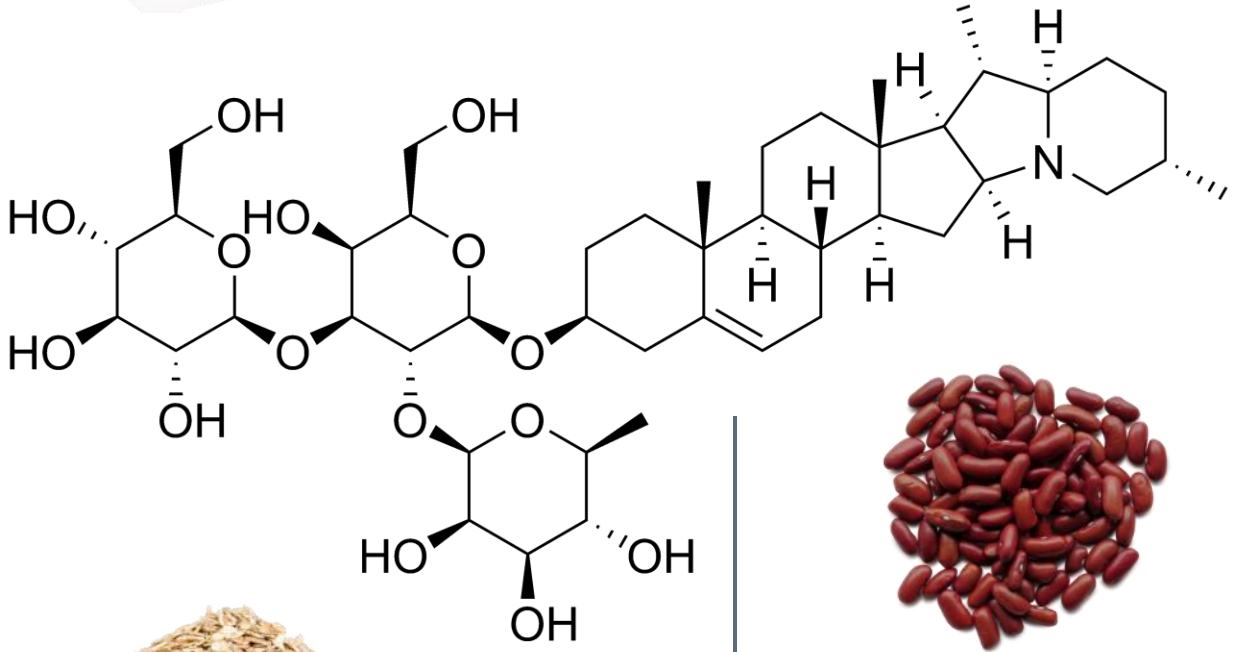
- Palm free
- Safe and mild
- COSMOS approved
- Globally compliant
- Cold process

WHAT ARE SAPONINS?

ALCHEMY

Saponins are naturally occurring molecules found in many different plants.

- Natural emulsifiers / surfactants
- Palm Free
- Safe, often food grade ingredients
- Many types have been identified
- Have health benefits
- Kind and mild to skin



Hydrophilic Part

Hydrophobic Part

QUILLAJA SAPONINS – A SUSTAINABLE STORY…

Quillaja trees grow in a managed plantation in Chile, made up of trees that are systematically pruned to achieve large amounts of biomass – the whole plant is used in the extraction of Quillaja saponins.

The Quillaja is classed as 'wild harvested' and the plantation has a FSC certificate showing its commitment to sustainability.

- New trees are constantly planted as they take 15 years to achieve maturity.
- Prunings are taken from the mature trees.

QUILLAJA SAPONINS: EXTRACTION PROCESS

ALCHEMY

STEP 1

Prunings taken from the mature trees on the plantation.

STEP 2

Biomass soaked in hot water to extract saponins.

STEP 3

Filtration and pasteurisation step.

STEP 4

Drying of Biomass in the sun.

BIOMASS BURNED TO HEAT WATER

SOAPWART SAPONINS

Soapwort is a common flowering plant that grows in many regions of the world and, for millennia, has been widely used by mankind for personal washing and washing clothing. It was grown by the Romans and planted around Roman baths.

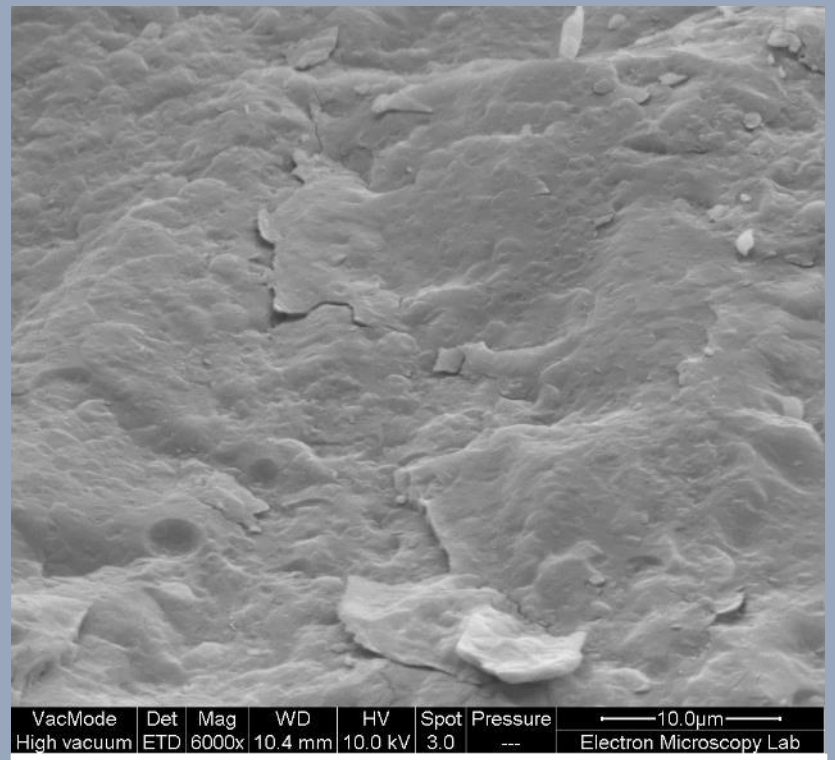
The saponins in Soapwort are very gentle and suitable for sensitive skin and babies.

→ The soapwort used in Sapogel® Q is wild harvested and both roots and leaves are extracted for the saponins.

STRUCTURE OF A SAPOGEL® Q BALM

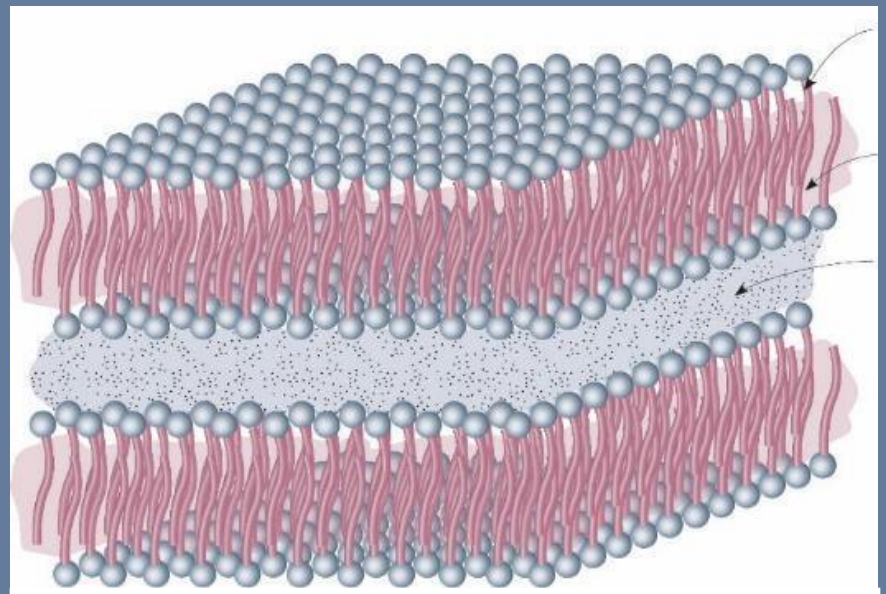
ALCHEMY

LAYERED STRUCTURE



- Layered structure, no individual oil droplets visible.

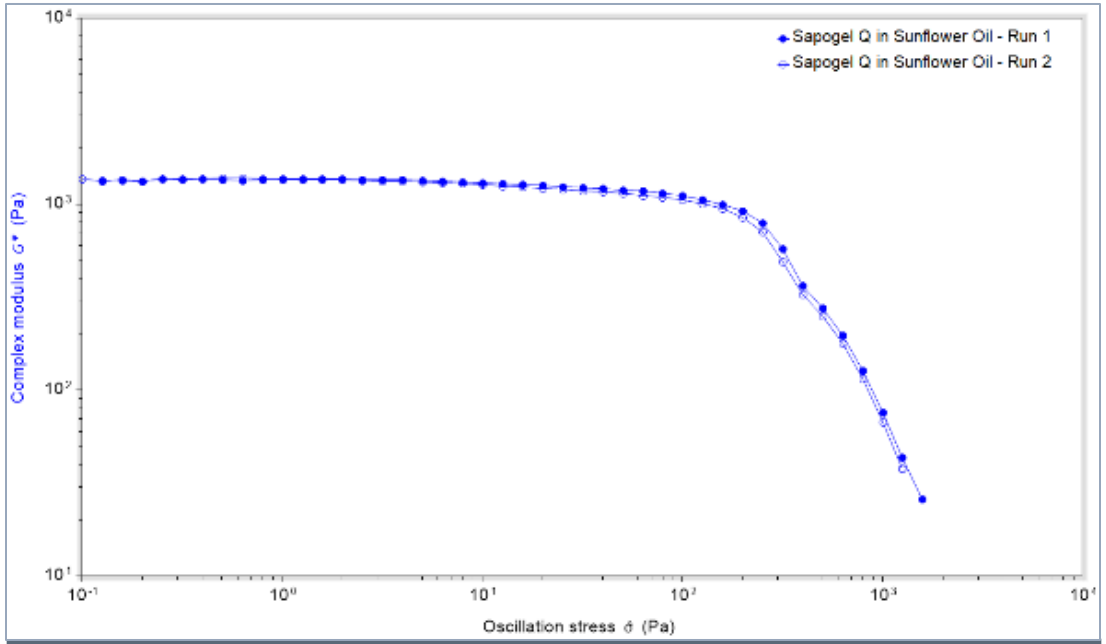
BALM STRUCTURE



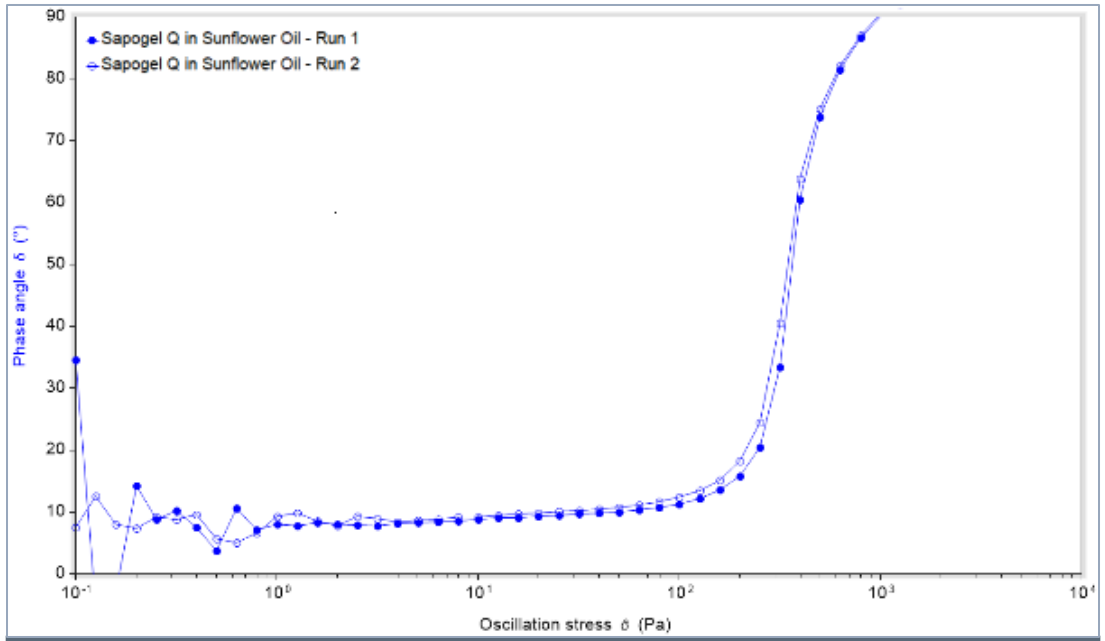
- Hypothesis of a layered structure with alternating layers of oil, water/glycerine and saponin.
- Balms have a 'skin identical' structure.

RHEOLOGICAL ANALYSIS OF SAPOGEL® Q

Sapogel® Q Balms are classed as **Structured Liquids**, and have some solid and liquid characteristics. Complex Modulus G measures the **rigidity** of the structure, while Phase Angle σ measures the **elasticity**. The graphs below shows how these change when oscillation stress is increased beyond the yield point.



Complex Modulus (Pa) v Oscillation Stress (Pa)



Phase Angle (°) v Oscillation Stress (Pa)

At low oscillation stress (e.g. at rest in a jar) ⇨ Balm has a rigid structure with high elasticity.

At high oscillation stress (e.g. when applied to skin) ⇨ Balm loses its rigid and elastic structure and flows as a liquid.

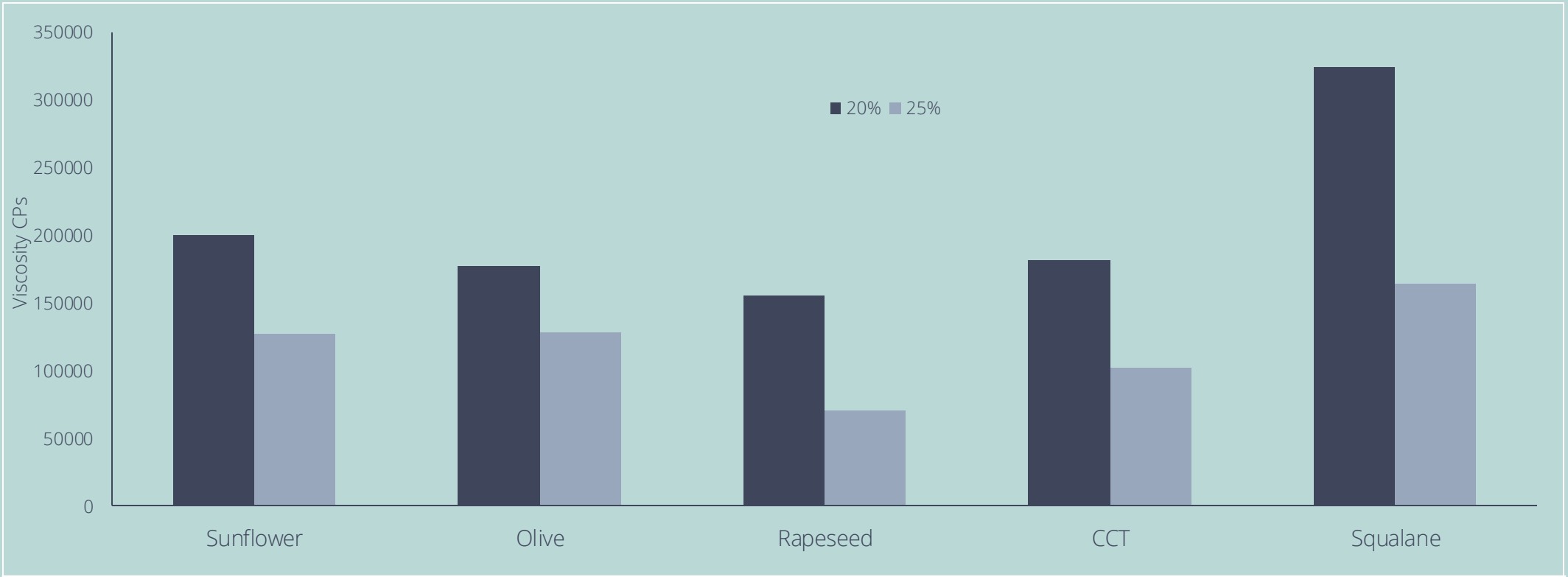
The Yield Point has been measured at 252 Pa.

TYPICAL SIMPLE FORMULA

PHASE A	
Sapogel® Q	**20%***
PHASE B	
Oil** (Veg Oil, ester, silicone)	**80%**
PHASE C	
Other additives (perfume, colour etc.)	**Qs**

*Average Amount. 15% = firm balm; 25% = Honey texture.
**Texture and Viscosity are highly dependent on the oil used.

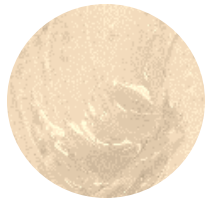
Viscosity and transparency of Sapogel® Q Balms with various oils



Opaque / Translucent

Opaque

Opaque


Almost transparent


Transparent

SAPOGEL® Q: PROCESS FOR MAKING A BALM

ALCHEMY

STEP 1

Weigh the Sapogel® Q and oil phases separately.

STEP 2

It is recommended to use an overhead mixer such as that pictured.

STEP 3

Immerse the mixer head in the Sapogel® Q and start the mixer.

STEP 4

Start incorporating the oil slowly, dropwise at first, the mixture should turn pale.

STEP 5

Carry on adding oil fairly slowly until it is all added (approx. 5 mins for 200g)

FINAL VISCOSITY IS REACHED 24 HOURS LATER

SAPOGEL® Q: SCALING UP ADVICE

ALCHEMY

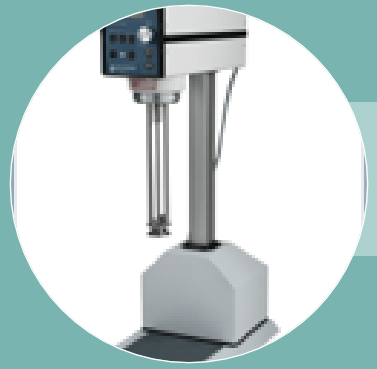
The main requirements are:

- Blades must be covered by the Sapogel® (initial) phase before oil is added.
- The blades must mix the whole bulk (avoid homogenisers which only mix locally).
- The mixer must be able to mix high viscosity products.
- There must be a method for introducing oil as the second step, in a gradual process such as a second tank. Oil can also be added in portions by hand.
- If using solid butters, these must be melted first in the oil phase, otherwise it is a cold process.

There is no specific rule for scaling up Sapogel® balms as equipment will vary:

LARGE SCALE EG. FRYMA KORUMA

SMALL SCALE EG. HOBART



NOT RECOMMENDED FOR SCALING UP!

ADDITION OF OTHER INGREDIENTS

GLYCERINE

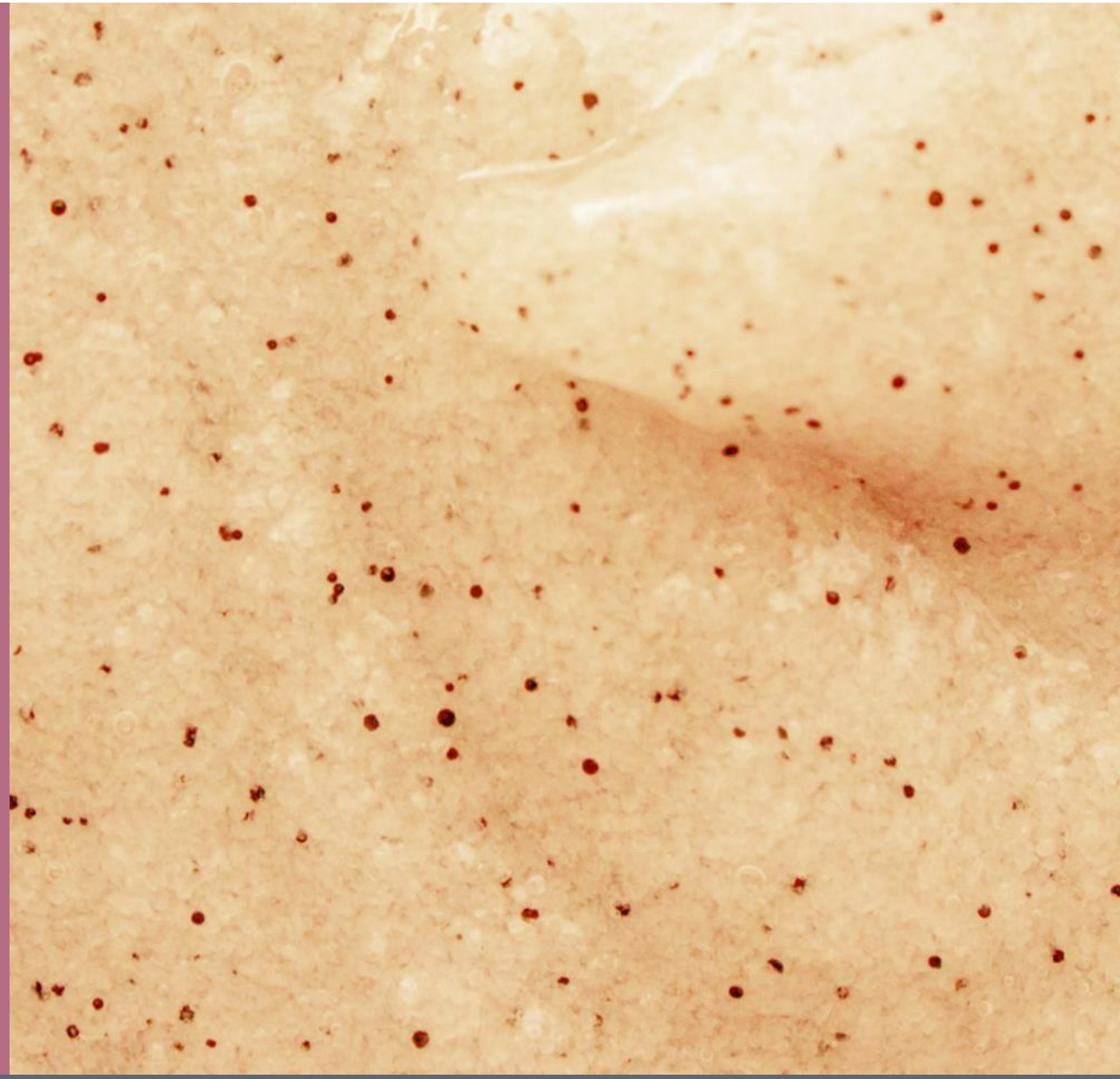
- Thins down the gel (useful for 15% gels)
- Gives a flowable, honey like texture.

WATER

- Up to 4% can be used, more than this can cause instability.
- Thins down the gel and gives it an opaque appearance.
- Can make concentrated serums

POWDER / EXFOLIATORS

- Easily dispersed in the gel.
- Acidic / alkaline exfoliators can also be used.
- Salt and sugar scrubs can be made easily.



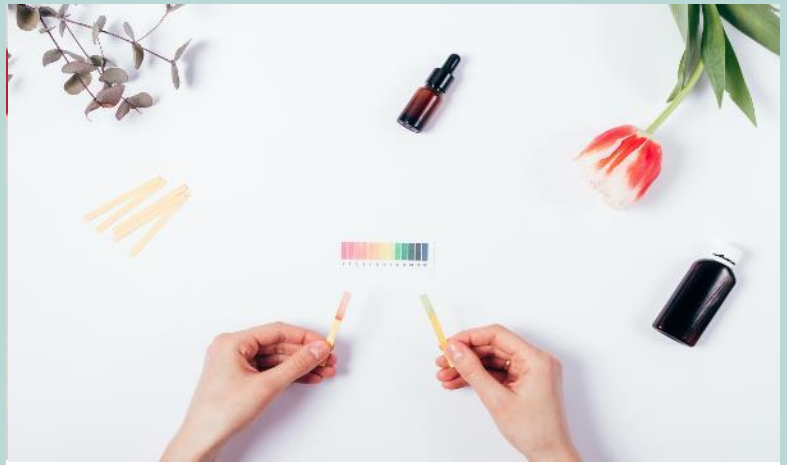
SUPERIOR STABILITY OF SAPOGEL® Q GELS

HEAT STABILITY

- Gels stored at 50°C for 3 months: Full stability for duration of test.

FREEZE / THAW

- Gels were placed in a domestic freezer (ca. – 10°C) for 24 hours. They were removed for 24 hours and allowed to thaw to 20°C.
- Above repeated 3 times: Full stability for duration of test.



ACIDS / BASES

- Citric Acid solution and Sodium Hydroxide solution were added to gels and no adverse effects were seen.

PRESERVATIVES

It is for the formulator and their safety assessor to decide whether preservatives need to be used and often depends on the packaging and use of the product.

A BP challenge test was carried out on a typical 20% Sapogel® Q balm with sunflower oil:

Test organism	Inoculum Level cfu g/ml product	Recovery cfu g or ml				
		0	2 days	7 days	14 days	28 days
Pseudomonas aeruginosa ATCC 9027	2.6e+06	1.7e+06	<100	<10	<10	<10
Staphylococcus aureus ATCC 6538	2.5e+06	3.0e+06	3.3e+05	<10	<10	<10
Escherichia coli ATCC 8739	2.7e+06	2.6e+06	<100	<10	<10	<10
Candida albicans ATCC 10231	2.5e+06	3.4e+06	NT	<100	<10	<10
Aspergillus brasiliensis ATCC 16404	6.3e+05	6.0e+05	NT	2.1e+03	<10	<10

- Type A criteria was reached for all organisms apart from S.Aureus, where Type B was reached (very marginal).
- No preservative should be needed for closed packaging.

BENEFITS AND APPLICATIONS OF SAPOGEL® Q BALMS

ALCHEMY

Texture benefits:

- Smooth, firm balms, no drag
- Have a gel like texture – easy to pick up
- Low potential of irritation from ingredients, very mild.
- Most formulations can be made cold.
- Balms are versatile – can be leave on or rinse off
- Compatible with many cosmetic ingredients

Application examples:

BALM CLEANSER

LIP BALM / MASK

MUSCLE BALM

SOLID COSMETICS

CLAY MASK

SCRUB

ROSE LIP MASK

A rich mask to moisturise lips, overnight or as a lip balm.

PHASE	TRADE NAME	INCI	% W/W
A	Sapogel® Q	Glycerin, Aqua, *Quillaja saponaria* Wood Extract, *Saponaria officinalis* (Soapwort) Leaf/Root Extract	20.00
B	Sunflower Oil	*Helianthus annuus* (Sunflower) Seed Oil	79.25
C	Geranium Organic Oil	*Pelargonium graveolens* (Rose Geranium) Oil	0.50
C	1% Sol. FD&C Red 2	CI 16185	0.25

Appearance: Thick, pale pink gel
Viscosity: 150,000 cps

SOLID CLEANSER

Appearance: Cream bar
Viscosity: N/A

A bar cleanser, warm in hands and transfer oil to face or body. Easily rinsed.

PHASE	TRADE NAME	INCI	% W/W
A	Sapogel® Q	Glycerin, Aqua, *Quillaja Saponaria* Wood Extract, *Saponaria officinalis* (Soapwort) Leaf/Root Extract	18.00
A	Primesurf SCI 85-P	Sodium Cocoyl Isethionate	2.00
B	Stearic Acid	Stearic Acid	4.00
B	Cetyl Alcohol	Cetyl Alcohol	4.00
B	Sunflower Wax	Helianthus Annuus (Sunflower) Seed Wax	8.00
B	Shea Butter	*Butyrospermum parkii* (Shea) Butter	30.00
B	Cocoa Butter	*Theobroma Cacao* (Cocoa) Seed Butter	10.00
B	Caprylic/Capric Triglycerides	Caprylic/Capric Triglycerides	23.50
B	'Coconut' Fragrance	Parfum	0.5

VANILLA BODY BALM

ALCHEMY

Appearance: Off-white balm
Viscosity: 200,000 cps

A rich balm high in butters with a non grainy texture. Suitable for all areas of the body.

PHASE	TRADE NAME	INCI	% W/W
A	Sapogel® Q	Glycerin, Aqua, *Quillaja saponaria* Wood Extract, *Saponaria officinalis* (Soapwort) Leaf/Root Extract	20.00
B	Shea Butter	*Butyrospermum parkii* (Shea) Butter	40.00
B	Cocoa Butter	*Theobroma cacao* (Cocoa) Seed Butter	2.50
B	Sunflower Oil	*Helianthus annuus* (Sunflower) Seed Oil	14.90
B	Caprylic/Capric Triglyceride	Caprylic/Capric Triglyceride	22.50
C	Spice Vanilla Fragrance	Parfum	0.10

BROWN SUGAR LIP SCRUB

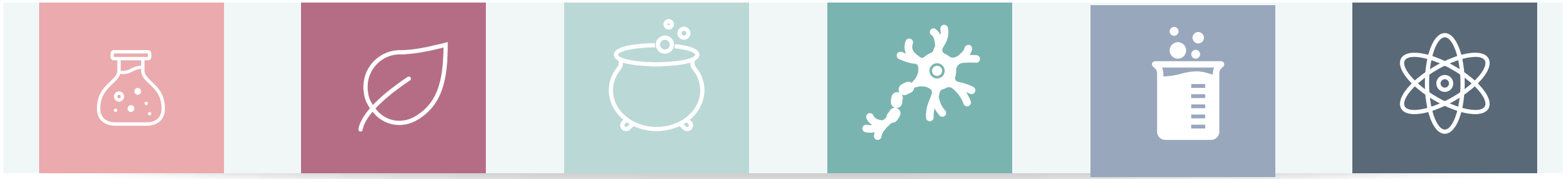
Appearance: Brown scrub
Viscosity: 150,000 cps

A balm-based sugar scrub suitable for lips or other body parts.

PHASE	TRADE NAME	INCI	% W/W
A	Sapogel® Q	Glycerin, Aqua, *Quillaja saponaria* Wood Extract, *Saponaria officinalis* (Soapwort) Leaf/Root Extract	18.00
B	Sunflower Oil	*Helianthus annus* (Sunflower) Seed Oil	21.75
B	Rapeseed Oil	*Brassica campestris* Seed Oil	20.00
B	Olive Oil	*Olea europea* (Olive) Fruit Oil	20.00
C	Caramel Flavour	*Aroma*	0.25
C	Brown sugar	Sucrose	20.00

WHY USE SAPOGEL® Q?

ALCHEMY



Sustainable ingredients and processing method.

Stable and reliable.

Excellent compatibility with other cosmetic ingredients.

Make balms without heat or wax.

Moisturising non drag textures.

Versatile range of balms can be made from cleansing to massage.


ALCHEMY
ingredients
THANK YOU