ALCHEMY
ingredients

MICROMULSE® LB

Liquid Micellar Oils

CONCEPT OF MICELLAR OIL

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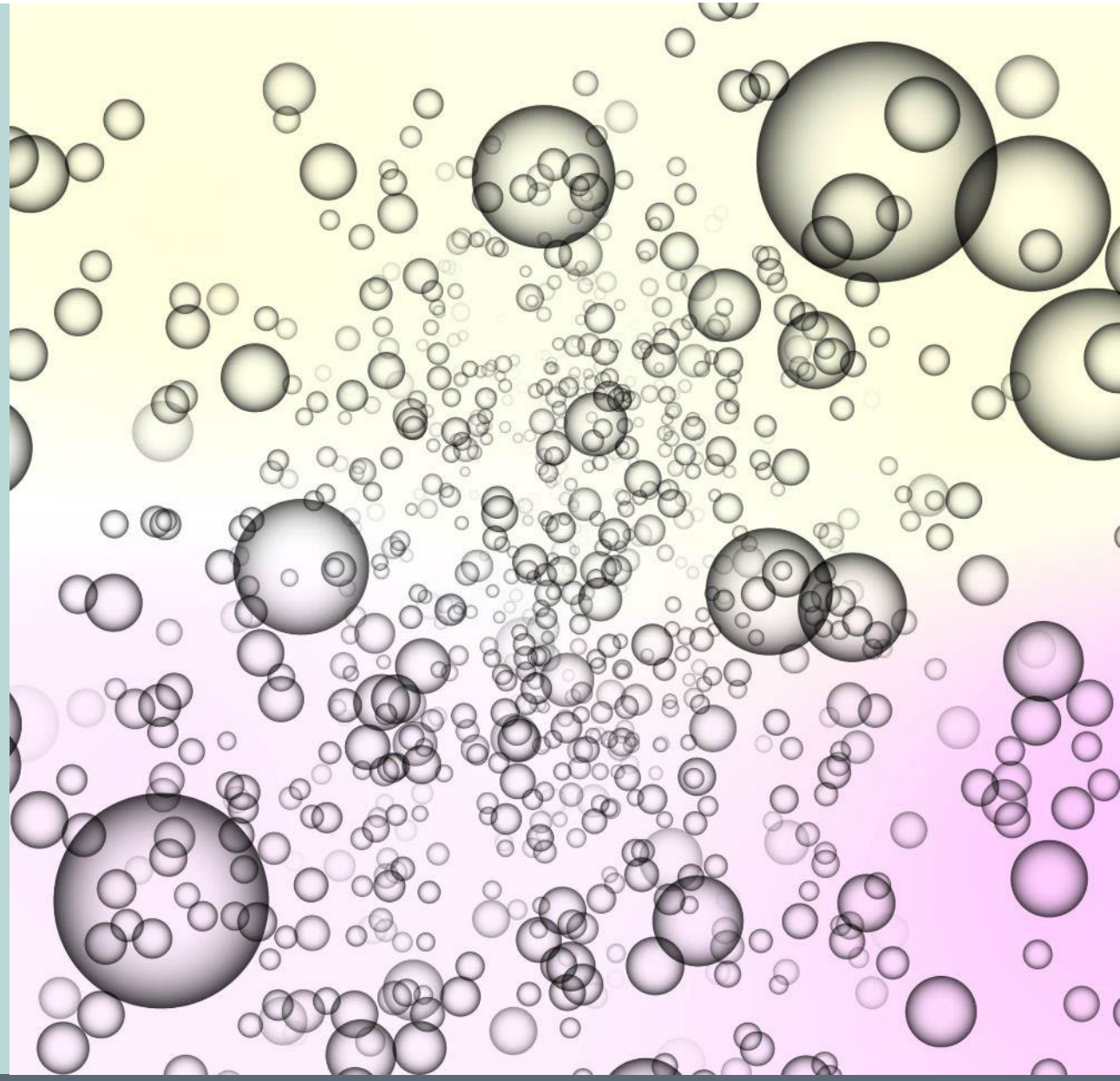
Micellar waters have been available as a cleansing essential for a long time. Micellar oils are a new concept in cleansing.

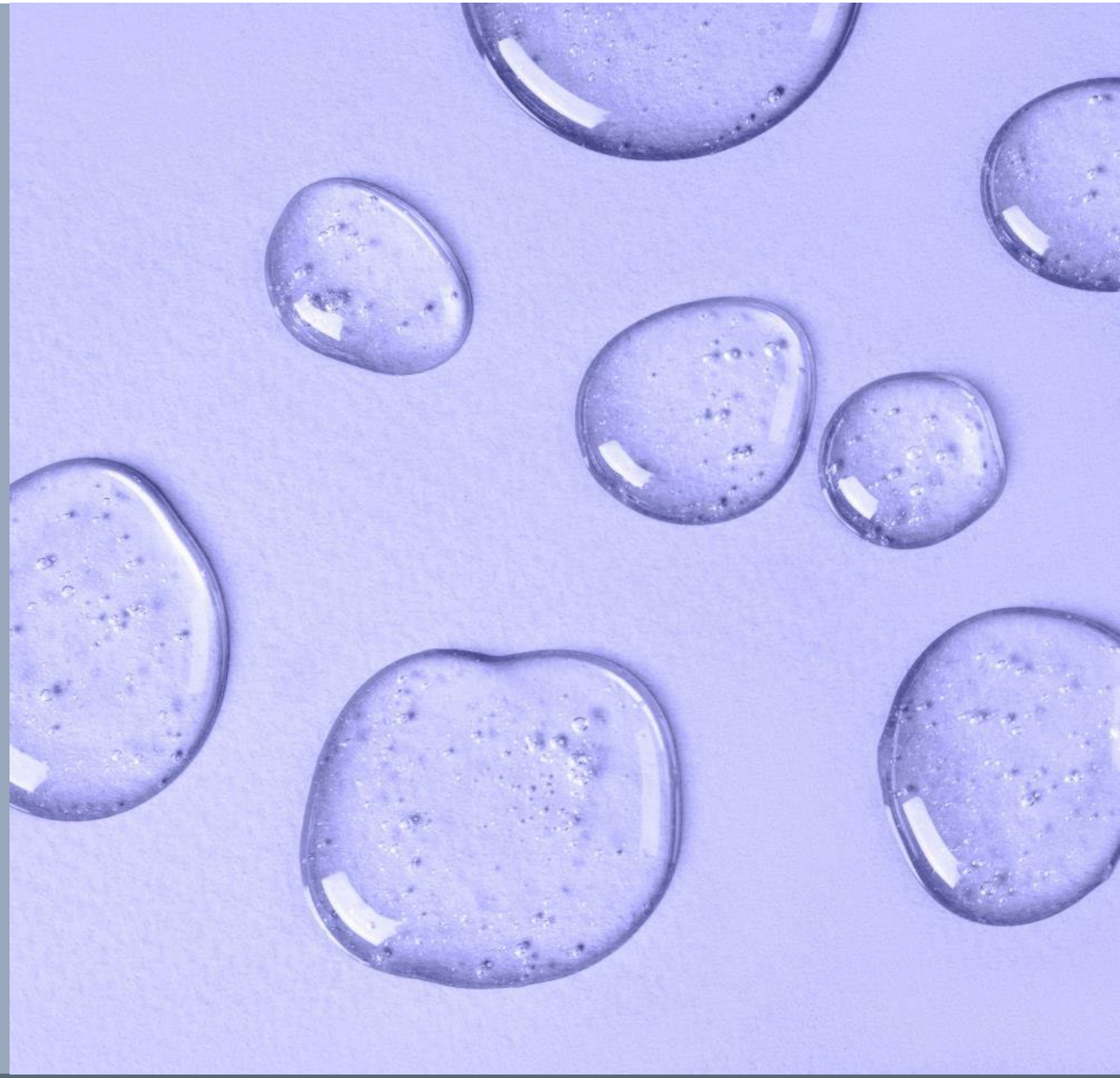
- Richer texture than waters and feel more nourishing.
- Transforms from an oil to a milk on addition of water.
- Can contain both oil soluble and water soluble actives.
- Thorough removal of makeup, leaving skin smooth.
- Mild and gentle, containing all natural, sustainable ingredients.



MCIROMULSE® LB: WHAT IS IT?

INCI: Glycerin, Polyglyceryl-10 Laurate, Aqua, Saponaria Officinalis Leaf/Root Extract

- Mild liquid blend
- Vegetable based ingredients
- Safe product, low irritancy potential
- Cold process manufacturing method
- COSMOS Approved
- 100% Natural Origin (ISO 16128)



ORIGIN OF RAW MATERIALS

POLYGLYCEROL ESTERS

- Derived from vegetable oils and glycerin
- High HLB but PEG free
- Manufactured via a Green process
- Naturally moisturising to skin

GLYCERINE

- Vegetable origin, from MB Palm or Coconut source
- Safe ingredient in cosmetics
- Naturally humectant
- Contributes to skin feel and texture

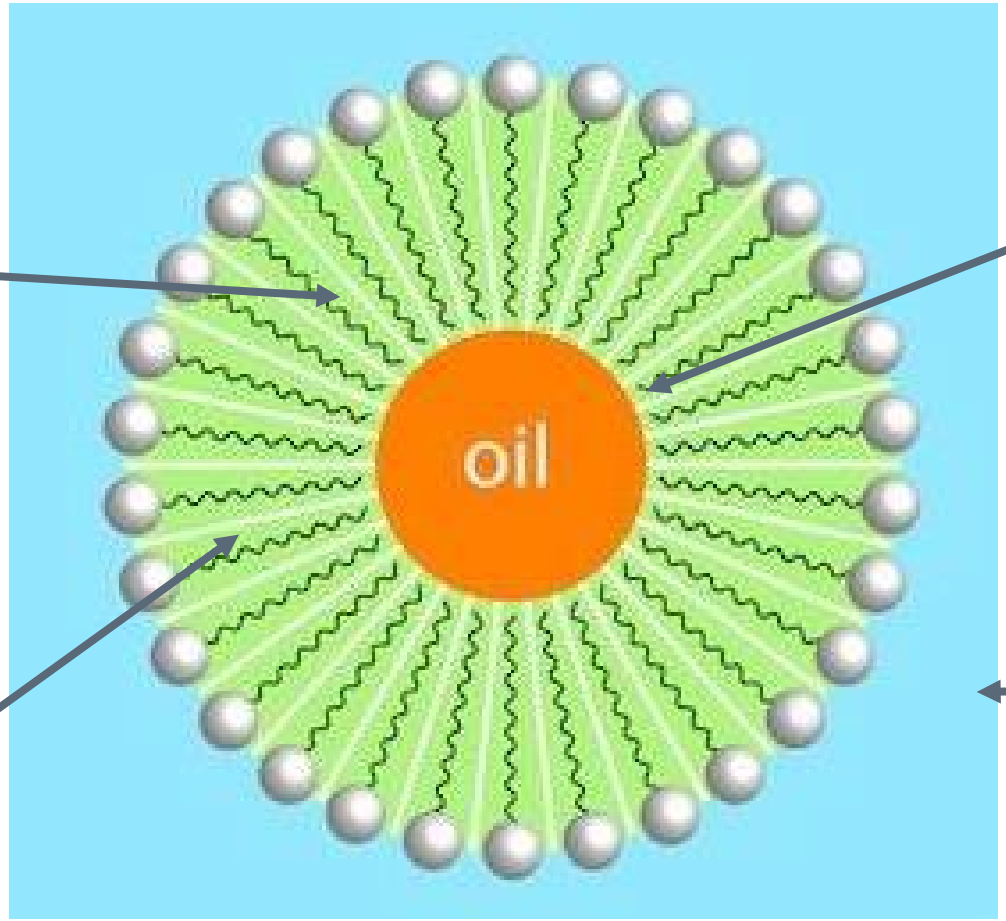
SOAPWORT EXTRACT

- Natural source of saponins
- Wild harvested
- Mild and safe
- Acts as a co-surfactant

SUSTAINABLE NATURAL SAFE

MICROMULSE® LB: INTERNAL STRUCTURE

Stable oil filled micelles are formed within a water and glycerine external phase.



Sebum and makeup are solubilised by the micelles and go into the oil phase.

Mild surfactant molecules help dissolve sebum and make up.

The presence of both oil and water phases results in a gentler cleansing experience.

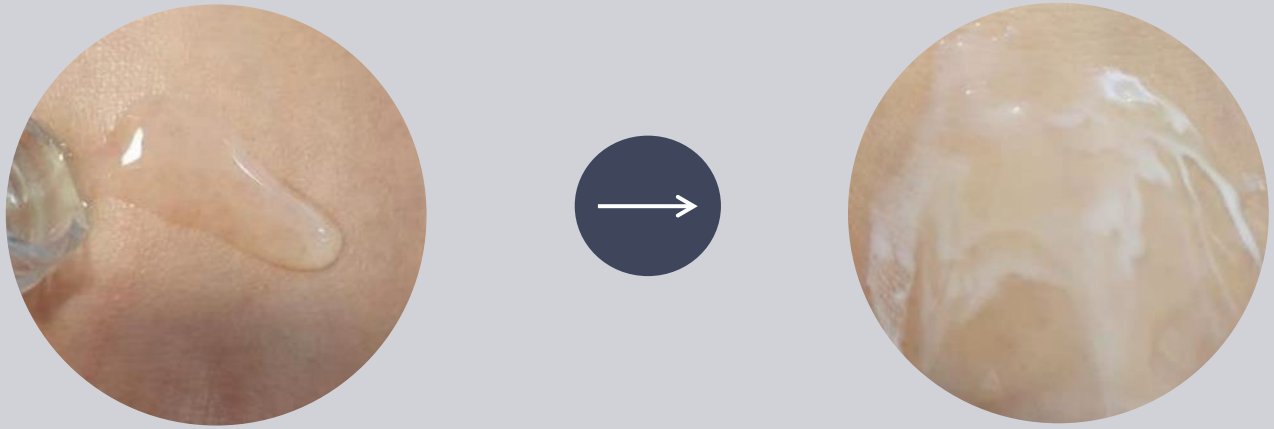
OIL-TO-MILK – A 'TRANSFORMING TEXTURE'

LIQUID MICELLAR OILS

- Attractive transparent appearance turning to milk on addition of water.
- Great cleansing power and easy-to-rinse.

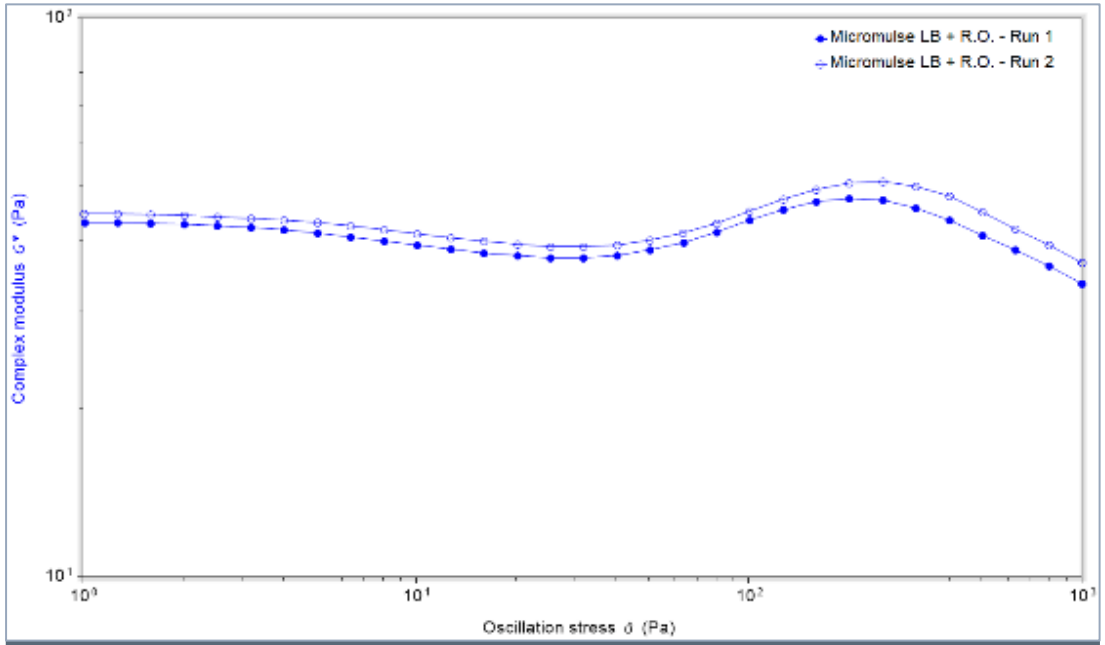
USING MICROMULSE® LB

- Enables the formulator to make Micellar oils easily using a low energy process.

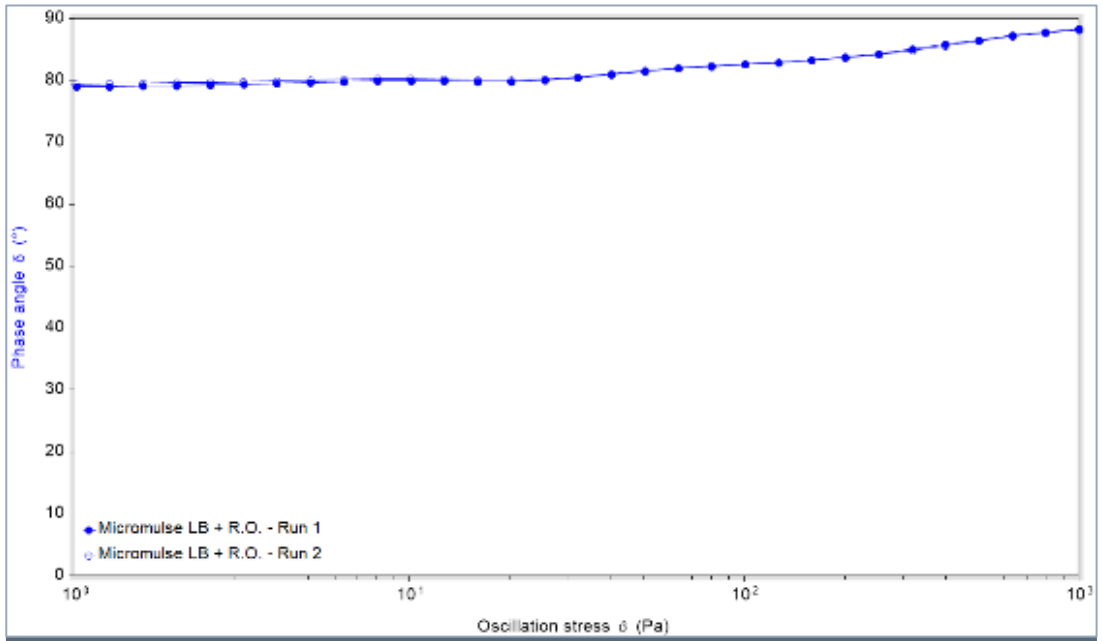


RHEOLOGICAL ANALYSIS OF MICROMULSE® LB

Micromulse® LB micellar oils are almost Newtonian liquids, exhibiting flow even at high viscosity. The viscosity is almost independent of the shear rate. Modulus G measures the rigidity of the structure, while Phase Angle σ measures the elasticity.
The graphs below shows how these change in a 20% Micromulse® LB micellar oil when oscillation stress is increased gradually.



Complex Modulus (Pa) v Oscillation Stress (Pa)

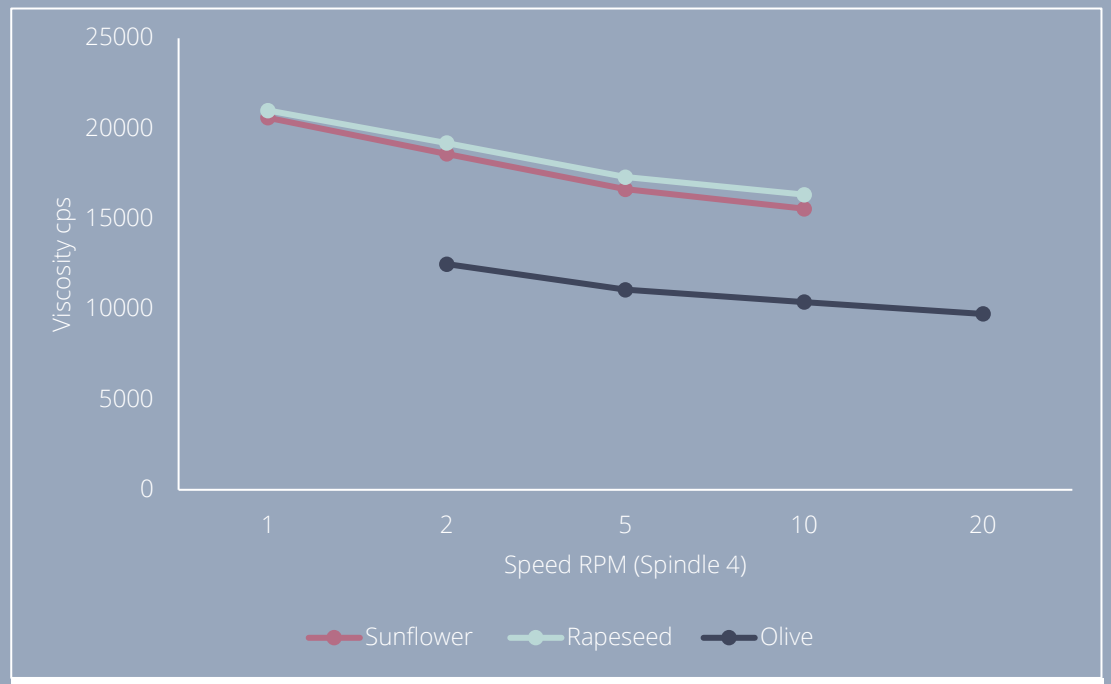


Phase Angle (°) v Oscillation Stress (Pa)

- At low oscillation stress (e.g. at rest in a bottle) ⇨ Gel has a thick liquid appearance.
- At high oscillation stress (e.g. when applied to skin) ⇨ Gel remains thick and flows on the skin.
- The Yield Point was not able to be measured as the product does not yield and retains its viscosity over the range tested.

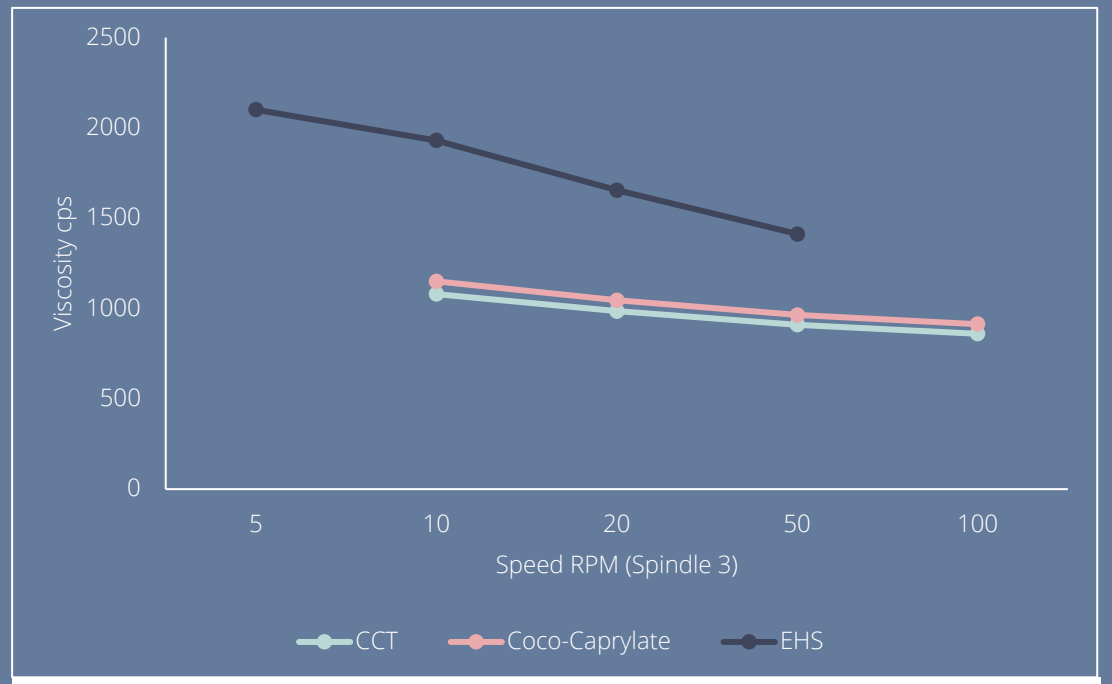
VISCOSITY DATA

VISCOSITY WITH VEGETABLE OILS (20% MICROMUSLE® LB)



Viscosity depends on the oil used, formulations with vegetable oils have a higher viscosity than esters or CCT. The viscosity is slightly dependent on shear rate but generally does not change.

VISCOSITY WITH ESTERS (20% MICROMUSLE® LB)



Viscosity depends on the ester used, formulations with esters have a lower viscosity than vegetable oils. The viscosity is slightly dependent on shear rate but generally does not change. The amount of water added will also affect viscosity.

TYPICAL SIMPLE FORMULA

PHASE A	
Micromulse® LB	15 - 20%

PHASE A	
Glycerine	25 - 35%

PHASE B	
Oil (including butters, esters etc)	40 - 50%

PHASE C	
Water	0 - 10%

MICROMULSE® LB: MAKING A MICELLAR OIL

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STEP 1

Weigh out Micromulse® LB, glycerine and water into a beaker and the oil phase into a separate beaker. Melt any butters into the oil.

STEP 2

Transfer Micromulse® phase onto an overhead mixer fitted with propeller blade and set to high speed (1000 rpm).

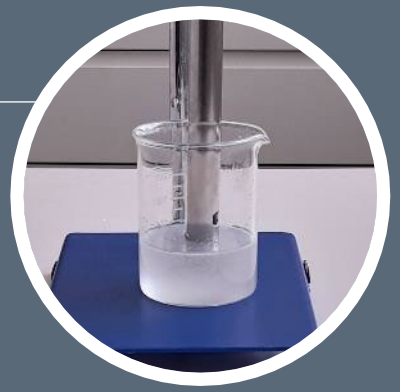
STEP 3

Start stirring and add oil slowly.

STEP 4

Continue adding oil in portions, allowing oil to mix in before adding more.

STEP 5



A white aerated thick liquid should form. Homogenise if possible after all the oil has been added.

STEP 6

Check transparency using a centrifuge or watch glass. Add other ingredients if needed.

TRANSPARENCY: HOW MUCH WATER DO I NEED TO ADD?

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Transparency is generally achieved by matching refractive indices of the internal and external phases.

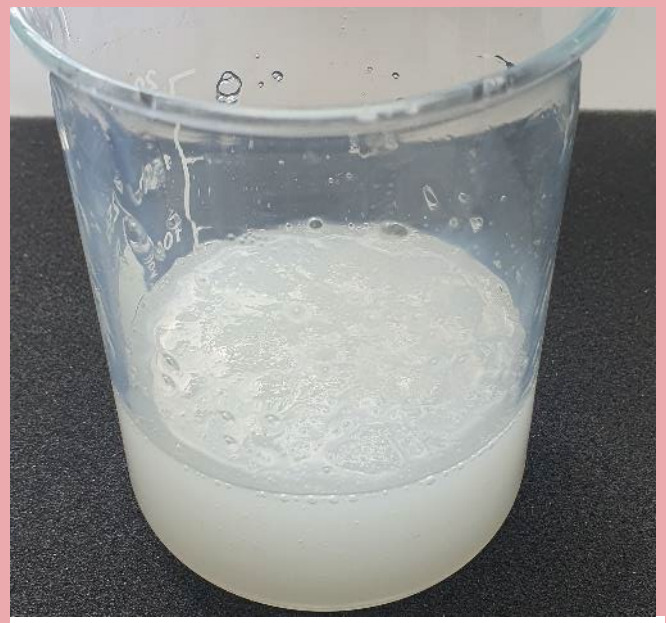
We have determined levels of water in a typical formula: 20% Micromulse® LB, 30% Glycerine, 50% Oil (fix Micromulse® LB & Glycerine, and vary oil / water ratio as a starting point)

OIL	AVERAGE REFRACTIVE INDEX (note: grades may vary)	% OF WATER REQUIRED FOR TRANSPARENCY*
Sunflower	1.474	0
Rapeseed	1.467	0
Almond	1.460	0.7
Olive	1.469	1
Rapeseed / Dicaprylyl Ether	1.459	2.5
Olive / CCT	1.458	4.5
Ethylhexyl Stearate	1.451	9
Caprylic/Capric Triglyceride	1.450	9
Coco-Caprylate	1.437	10

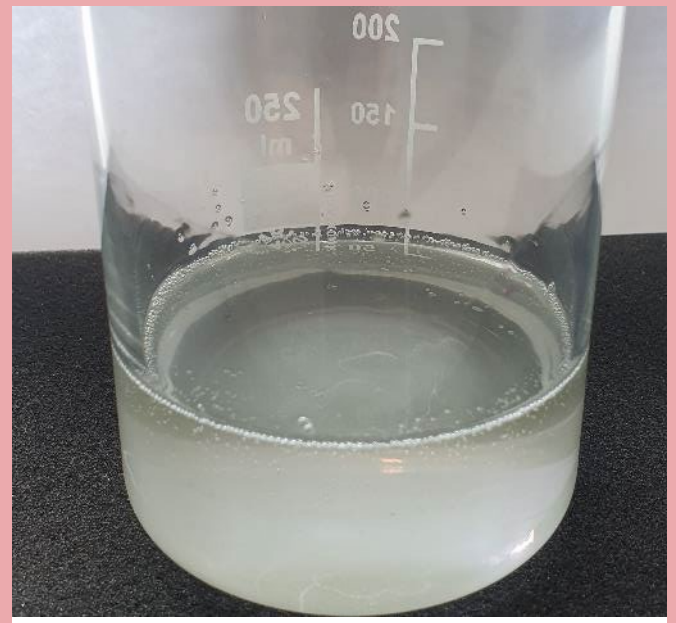
* For blends of oils, calculate the average refractive index and compare to the table.

TRANSPARENCY TIPS

- **Transparency** can normally be achieved with most oils.
- It is recommended to add the **minimum amount of water** and check transparency by either spinning in a centrifuge or applying to a glass surface.
- **Estimate** the amount of water according to the RI of the oil and add a small amount less. Then add small portions afterwards until transparency reached.
- Note that these formulas are **usually very aerated** when they are made and air can take up to 1 week to clear completely.
- **Air incorporated** in manufacturing can be minimised by using vacuum, centrifuge or by slow stirring for a period after mixing.
- **More water** = lower viscosity & lighter texture.



AFTER MAKING...



A FEW DAYS LATER

GENRAL FORMULATION TIPS

ALCHEMY

CHOICE OF OIL

- Most oils or butters can be used either on their own or in a blend such as vegetable oils, esters, hydrocarbons etc.
- Avoid choosing an oil blend that requires more than 10% of water as this can make the product unstable.

INGREDIENT INCOMPATIBILITIES

- Glycols such as Propylene Glycol may not be compatible in large quantities.
- Avoid very high and low pH formulas (adjust between 4 and 8).

OTHER

- Preservatives do not need to be added as water activity is low.
- If transparency is not required, water can be added to reduce viscosity and give a cream / gel type appearance.

STABILITY TESTING

Formulations were tested for 1 month at 50°C, 3 months at 40°C and 3 months at 4°C as well as kept at room temperature.

A freeze thaw test was conducted with 3 cycles of between -18°C and room temperature.

- No changes were seen in the appearance or viscosity and no separation of the phases was detected.

- TVC testing showed no microbial growth in samples.

MICROMULSE® LB IS SUITABLE FOR THE EYE AREA

A non-animal study (TG492) was carried out to determine suitability of Micromulse® LB for use around the eye area.

This is a validated study that can be included on SDSs and uses reconstituted human skin

Test involves subjecting the skin to the test material and cell viability examined at intervals.

- Results: 88% (60% and above is a pass)
- Micromulse® LB is considered non-irritating and non-harmful to eyes and can safely be used in these formulations.

EVIDENCE FOR MICELLES

In a micellar emulsion, a laser light beam will be scattered by micelles which are normally invisible as they are so small. In a true solution or pure substance there are no particles and a laser beam will pass straight through unchanged.

1. PURE GLYCERINE

- No beam

2. MICELLAR OIL WITH CCT

- Micelles are seen in the beam of light

3. MICELLAR OIL WITH SUNFLOWER OIL

- Micelles are seen in the beam of light

USING SK-IV SKIN MOISTURE MONITOR

The monitor was applied to a hand washed with water only and dried.

This was then repeated after washing with a typical Micellar oil formulation using Micromulse® LB. The meter also measures the amount of oil/fat on the skin.

RESULTS

	WATER %	OIL %
Baseline (no treatment)	15.6	36.5
Water only (control)	18.6	34.2
Washed with Micromulse® LB formulation	26.4	43.1

→ Using a simple, quick method it can be shown that a typical Micromulse® LB cleansing oil can increase both hydration and oil level in the skin after a single application.

MICROMULSE® LB: REMOVING WATERPROOF MAKE-UP

Waterproof Mascara was applied to a white tile and 3 cleansing oil formulations were applied:

1) Oil only
2) A commercial cleansing oil containing PG Esters + Oil
3) Micellar Cleansing oil with Micromulse® LB

Light rubbing of the area followed by immersion in water was carried out.

→ Shows superior make up cleansing with minimal agitation using the Micromulse® LB micellar oil.

BATH OIL FORMULATIONS

Micromulse® LB makes an ideal bath oil formulation.
It disperses oils, essential oils and fragrances perfectly, and rinses away without any residue.

1. Micromulse® LB Blooming Bath Oil

2. Commercial Bath Oil

3. Oil Formula Only

NEW TREND IN HAIRCARE: KOREAN HAIR WATERS

These are low viscosity transparent liquid formulations based on glycols, water, surfactants, conditioners and oils.

L'OREAL ELVIVE WONDER WATER

Apply to hair and leave for 8 seconds, then rinse.

PROPYLENE GLYCOL • ALCOHOL DENAT. • MYRISTYL ALCOHOL • AQUA / WATER • PARFUM / FRAGRANCE • DICAPRYLYL C A R B O N A T E • T O C O P H E R O L • HYDROXYPROPYLTRIMONIUM HYDROLYZED WHEAT PROTEIN • HYDROXYCITRONELLAL • PHENOXYETHANOL • ARGININE PCA • BEHENTRIMONIUM CHLORIDE • LIMONENE • BENZYL SALICYLATE • LINALOOL • BENZYL ALCOHOL • ISOPROPYL ALCOHOL • ALPHA-ISOMETHYL IONONE • GERANIOL • CETRIMONIUM CHLORIDE • CITRONELLOL • COUMARIN • HEXYL CINNAMAL. (F.I.L. C263130/1).

ALCHEMY MIRACLE HAIR OIL

Apply to hair and leave for 8 seconds, then rinse.

GLYCERINE, CAPRYLIC/CAPRIC TRIGLYCERIDE, AQUA, POLYGLYCERYL-10 LAURATE, MAGIFERA INDICA (MANGO) SEED BUTTER, PANTHENOL, SAPONARIA OFFICINALIS LEAF/ROOT EXTRACT, PARFUM, CI19140 / CI 14700

THE NATURAL ALTERNATIVE!

Texture benefits:

- Luxurious thick oils that turn to milk on contact with water.
- Pourable texture, suitable for bath or shower oils.
- Non-irritating and kind to skin
- Effectively removes excess sebum and make up.
- Leaves skin feeling moisturised and non greasy.
- Suitable for hair, silicone free, washes easily and does not build up.

Application examples:

BATH & SHOWER OILS

ESSENCE MASKS

HAIR WATERS

CLEANSING OILS

BLOOMING BATH OIL

Appearance: Green Transparent Gel
Viscosity: 15,000 cps

A light bath oil which turns the bath milky and leaves skin feeling soft and fragrant.

PHASE	TRADE NAME	INCI	% W/W
A	Micromulse® LB	Glycerine, Polyglyceryl-10 Laurate, Aqua, Saponaria Officinalis (Soapwort) Leaf/Root Extract	17.50
A	Glycerine	Glycerin	32.50
B	Rapeseed Oil	*Brassica campestris* Seed Oil	40.00
B	Olive Oil	*Olea europaea* (Olive) Fruit Oil	5.00
B	Fancor Abyssinian Oil	*Crambe abyssinica* Seed Oil	2.00
B	Marine Minerals Fragrance	Parfum	2.0
B	Sea Fennel Fragrance	Parfum	0.6
B	Tocopherol	Tocopherol	0.2
B	FD & C Yellow 5 / Blue	CI19140 / CI42090	0.2

MICELLAR CLEANSING OIL

A transparent transforming oil-to-milk cleanser which removes make up and sebum.

PHASE	TRADE NAME	INCI	% W/W
A	Micromulse® LB	Glycerine, Polyglyceryl-10 Laurate, Aqua, Saponaria Officinalis (Soapwort) Leaf/Root Extract	17.50
A	Glycerine	Glycerin	32.50
A	Water	Aqua	9.00
B	Caprylic/Capric Triglyceride	Caprylic/Capric Triglyceride	38.0
B	Shea Butter	Butyrospermum parkii (Shea) butter	1.75
B	Neossance Squalane	Squalane	1.00
B	Sparkling Kombucha Fragrance	Parfum	0.25

Appearance: Colourless Oil
Viscosity: 1,000 cps

MIRACLE HAIR OIL

Appearance: Orange Oil
Viscosity: 750 cps

A Korean inspired hair oil that conditions hair leaving it smooth and shiny. Apply for a few seconds and rinse off.

PHASE	TRADE NAME	INCI	% W/W
A	Micromulse® LB	Glycerine, Polyglyceryl-10 Laurate, Aqua, Saponaria Officinalis (Soapwort) Leaf/Root Extract	17.50
A	Glycerine	Glycerin	32.25
A	Water	Aqua	8.75
B	Panthenol	Panthenol	0.1
B	Caprylic/Capric Trigyceride	Caprylic/Capric Triglyceride	38.4
B	Mango Butter	*Mangifera indica* (Mango) Seed Butter	2.0
B	Orange and Ginger Fragrance	Parfum	0.8
B	FD & C Yellow 5 / Red	CI19140 / CI 14700	0.2

WHY USE MICROMULSE® LB?

ALCHEMY

Extremely mild: can be used for sensitive skin products.

Moisturises skin leaving it clean and not stripped of oil.

Excellent make up removing power and cleansing for all skin types.

Versatile – can be used with different oils.

High tech emulsifier to produce on-trend micellar oils.

Provides a luxurious texture suitable for many applications.


ALCHEMY
ingredients
THANK YOU