SIMULGEL™ EG

Emulsifying-thickening polymer
A formulator's essential partner!

- **Polymer in ready-to-use fluid form**

- **Emulsifies all oily phases**
  gel-cream texture
  Gentle and light

- **Thickens and stabilizes your formulations, even the most demanding ones**

- **Compatible with all cosmetic active ingredients**

(Patent)

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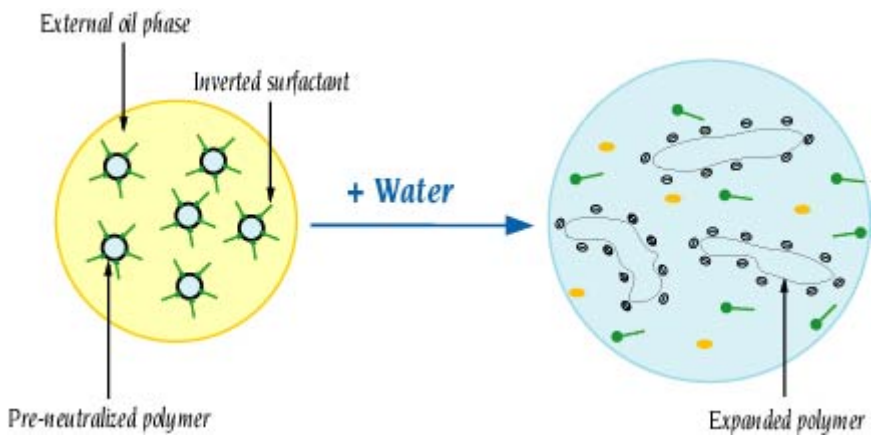
1 - DEFINITION

SIMULGEL EG is a pre-neutralized polymer in an inverse emulsion.
In ready-to-use liquid form, it instantly forms non-tacky gels, with no need for prior dispersion, neutralization or hydration.

SIMULGEL EG, HSD polymer
"HYDRO SWELLING DROPLETS"



By just adding water, SIMULGEL EG inverts and the polymer network expands instantly, to form a perfectly stable gel in a few seconds.

<u>Key advantages of HSD polymers</u>:

-Production of **cold emulsions** under **very moderate shear**,
-Great flexibility in use because of their **lipodispersible character**,
-Production processes facilitated,
-Development of gels, gel-creams and emulsions with a **light, non-tacky touch**.

2 - INTRODUCTION

SIMULGEL EG is the formulator's essential partner for success with cosmetic formulas.

SIMULGEL EG facilitates the formulator's work:

- **It emulsifies all oily phases**, regardless of their nature: no more worries with silicones or vegetable oils.

- Whatever the type of application**, it thickens all the formulas**
  → even if they have high solvent content,
  → even if the medium is acidic, or conversely highly alkaline.

- **It stabilizes emulsions**: used at lower concentrations, SIMULGEL EG maintains the viscosity of the formula over time, even if it has a high active ingredient content.

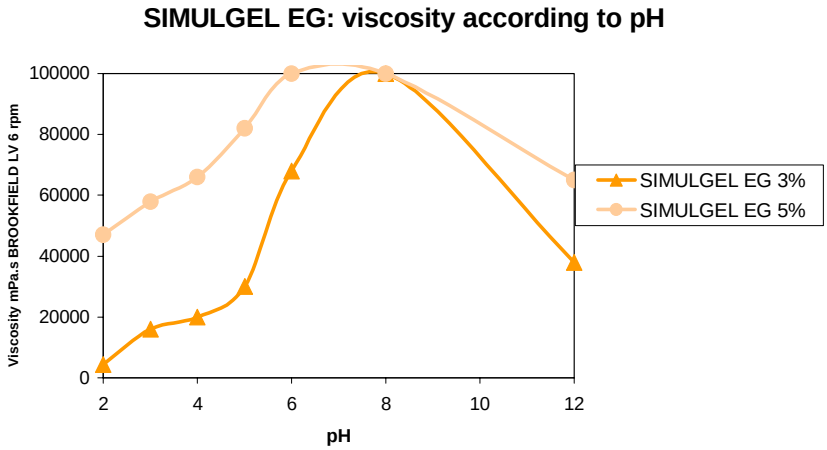
The value of SIMULGEL EG lies in the **pleasant texture** that it gives to cosmetic formulas: they are light and pleasant to spread on the skin. They penetrate rapidly leaving the skin soft, with no residual oily effect.

3 - SIMULGEL EG, a first choice thickener

3.1 – Thickening capacity over a wide pH range

SIMULGEL EG is capable of thickening aqueous media over a very wide pH range (from pH 4 to pH 12), as shown by graph no. 1 below. The viscosity of the gels obtained does not change over time (> M1).

Graph no. 1: Viscosity of an aqueous SIMULGEL EG gel according to pH
Effect of polymer concentration



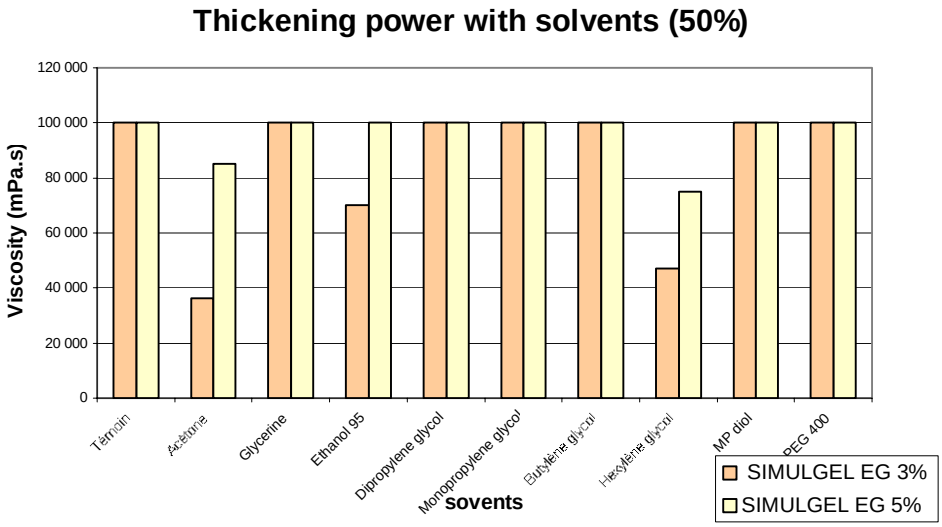
Formulas tested: SIMULGEL EG 3% or 5%/water qs 100
Viscosity measured on Brookfield (LV6rpm)

➔ SIMULGEL EG is the formulator's essential partner for thickening all your formulas, even when they require extreme pH values.

3.2 – Thickening capacity for polar solvents

SIMULGEL EG can thicken media containing up to 50% of polar solvents (see graph no. 2 below). The viscosity of the gels obtained does not change over time (>M3).

Graph no. 2: Viscosity of SIMULGEL EG gels according to the nature of the solvent



Formulas tested: SIMULGEL EG *3% or 5%/solvent 50%/water qs.*
Viscosity measured on Brookfield LV 6 rpm

➔ Because of its capacity to thicken media with high solvent content, SIMULGEL EG is your formulator's essential partner for slimming gels, thigh cream formulas, dissolving gels, hair gels, masks, skincare serums and "aromatherapy" products rich in essential oils.

Some examples of SEPPIC formulas:

- ***Hydroglycolic gels***:
  SEPPIC has developed a transparent, iridescent silicone-based hair gel (SEPPIC formula 6742). The transparency of the emulsion is a consequence of the equivalent refractive indices of the silicone phase (30%) and the glycolic phase (40%).
- ***Hydroalcoholic gels***:
  Slimming gel (refer to SEPPIC formula 6733 B)
  Leave-on protection gel (refer to SEPPIC formula 6779 A)
  Purifying mask (refer to SEPPIC formula 6828)
- ***Acetone gels:***
  Dissolving gel (refer to SEPPIC formula 5845)
- ***Anhydrous gels:***
  By choosing a suitable solvent, it is also possible to produce anhydrous gels using SIMULGEL EG as a base. Glycerol or monopropylene glycol, used at 97% with 3% SIMULGEL EG, both give viscous gels in the region of 100,000 mPa.s.

4 – SIMULGEL EG, a novel emulsifier

SIMULGEL EG is capable of emulsifying and stabilizing many oily phases:
⇨ **WITHOUT addition of a conventional emulsifier**
⇨ **WITHOUT HLB calculation problems**
⇨ **WITHOUT neutralization** (pre-neutralized polymers)

As proven by table no. 1 below, the emulsifying power of SIMULGEL EG is confirmed on oily phases of very different natures. The gel-creams obtained are very stable under extreme conditions, both at high temperature and in freeze/thaw cycles (-5/+40 °C).

Table no. 1: Emulsifying power of SIMULGEL EG with respect to various oily phases.

SIMULGEL EG 3% **Oil 10%** **Water QS 100%**	**Stability at 50 °C**	**Stability at 40 °C**
Cetearyl octanoate	*> M1*	*> 1 year*
Caprylic capric tryglyceride	*> M1*	*> 1 year*
C12-C15 alkyl benzoate	*>M1*	*> 1 year*
Isononyl isononanoate	*> M1*	*> 1 year*
Paraffin oil	*> M1*	*> 1 year*
Isohexadecane	*> M1*	*> 1 year*
Dimethicone	*> M1*	*> 1 year*
Cyclomethicone	*> M1*	*> 1 year*
Sweet almond oil	*> M1*	*> 1 year*
Jojoba oil	*> M1*	*> 1 year*
Squalane	*> M1*	*> 1 year*
C8C10 Triglyceride + oxybenzone 5%	*> M1*	*> 1 year*
C8C10 Triglyceride + octinoxate 5%	*> M1*	*> 1 year*
C8C10 Triglyceride + avobenzone 5%	*> M1*	*> 1 year*
Repellent 3535 ®	*> M1*	*> 1 year*

Formulas tested: SIMULGEL EG 3%/oil 10%/water qs 100

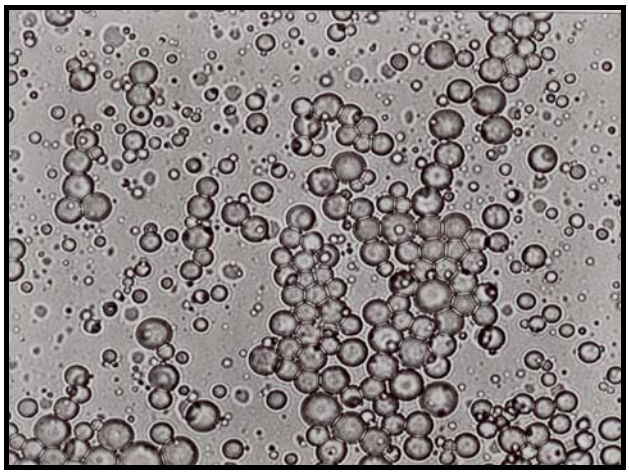
Notes
➢ SIMULGEL EG is capable of emulsifying up to 40% of oily phase.
➢ The very good compatibility of SIMULGEL EG with volatile silicones and silicone-based powders enables the production of gel-creams with novel powdery feel which leaves the skin extremely soft (refer to SEPPIC formula 6848)
➢ The good compatibility of SIMULGEL EG with chemical filters enables the formulation of sun protection products with a smooth, uniform texture and a stable SPF over time (refer to SEPPIC formulas 6736 and 6773 B)

⇨ The major value of using an emulsifying-stabilizing polymer such as SIMULGEL EG is the ability to **PRODUCE COLD EMULSIONS.**

↳reduces production costs
↳facilitates industrial manufacturing processes
↳protects heat-sensitive active ingredients

⇨ Moreover, emulsion production with SIMULGEL EG does not necessitate a restrictive procedure: **gentle stirring and moderate shear are all that are needed to emulsify.**

⇨ SIMULGEL EG offers the possibility of developing **original new textures** such as **gel-creams**. Gel-creams give a soft, light texture which is particularly pleasant to spread and offer comfort in use.



Photograph no. 1: *Microscopic observation of a gel-cream (400x).*
Formula: SIMULGEL EG 3%/Caprylic capric tryglyceride 15%/water qs 100%

➲ SIMULGEL EG forms a polymeric network around the oil droplets.

➲ Rigidification of the oil/water interface

➲ Reduced risk of coalescence

5 – SIMULGEL EG, a stabilizer for cosmetic active ingredients

SIMULGEL EG is compatible with many active ingredients used in cosmetics, in both emulsion and gel-cream forms.

SEPPIC has developed a wide range of formulas to illustrate this unquestionable technical advantage.

Examples:		*SEPPIC Formula No*
• **Compatibility with lipoaminoacids**		
SEPILIFT DPHP, anti-ageing	*firming bust care (gel-cream)*	*6768*
SEPICALM VG/SEPICALM S, anti-stress	*concealing gel for sensitive skin*	*6793*
SEPICONTROL A5, sebum control	*care gel for greasy skin*	*6734*
SEPICALM MP, hair anti-stress	*repairing cream for stressed hair*	*6780 A*
• **Compatibility with mineral salts**		
SEPITONIC M3, energizing mineral cocktail	*"good morning" gel-cream*	*6811*
• **Compatibility with vitamins**		
SEPIVITAL (vit C + vit E)	*anti-age revitalizing cream*	*6744*

5.1 – Exemple 1 : Stabilization of dihydroxyacetone

The DHA formulated into cosmetics is likely to degrade to acidic sub-products which irritate the skin. Excellent stability of the formula is indispensable, whatever parameter is considered.

① Maintenance of the acidity of the medium over time (pH 4-5): at alkaline pH the degradation of DHA is significantly accelerated.

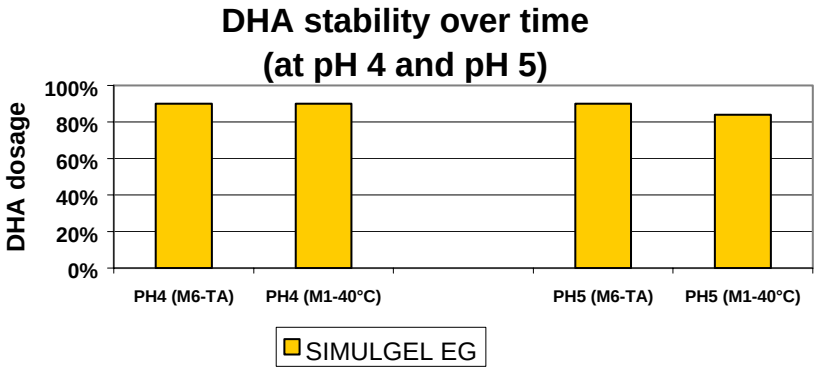
② Stability of the DHA in the formula at room temperature and at high temperature (check by content).

③ Stability of the viscosity over time.

→ SIMULGEL EG fully satisfies these three requirements (see graphs nos 3, 4 and 5 below)

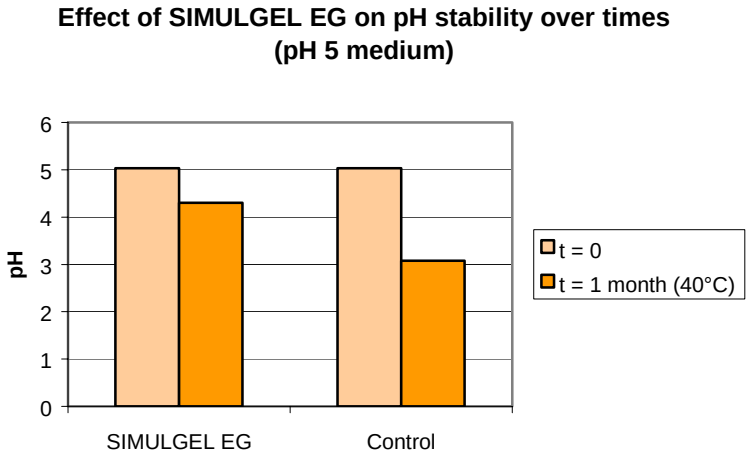
Formula tested: SIMULGEL EG qs 30,000 mPa.s
DHA 5%
Squalane 4%
Water qs 100%

Graphe n°3 : DHA content over time by potentiometry



➲ DHA is stable in SIMULGEL EG gels
> 90% at M3-RT and
> 80% at M1-40 °C

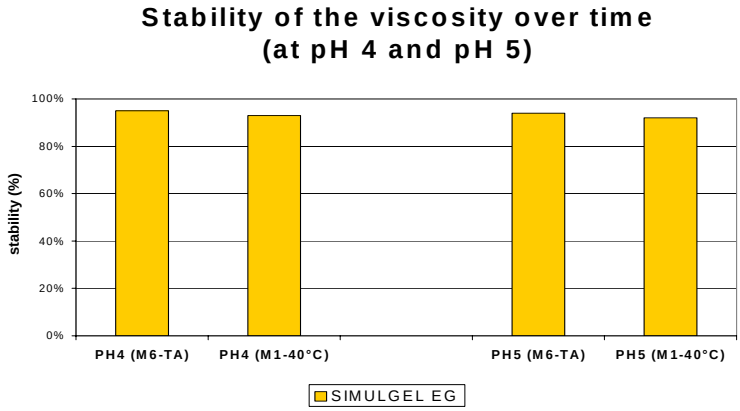
Graphe n°4: pH change over time



➲ SIMUGEL EG plays an important role in the stability of the pH of formulations containing DHA.

control : DAH 5% / water qs

Graphe n°5 : viscosity over time



➲ SIMULGEL EG gels have good viscosity stability, independent of the temperature and the pH

➔ SIMULGEL EG is the formulator's essential partner for formulating DHA-based tanning products

5.2 – Exemple 2 : Compatibility with cationic surfactants

SIMULGEL EG shows no incompatibility with cationic surfactants.
For example, SIMULGEL EG is capable of thickening gels containing 0.5% a.m. of cationic surfactants and 30% ethanol at pH 5, with good stability of the viscosity over time.

➔ SIMULGEL EG enables the development of hair products with a non-tacky feel, which does not leave a residual film nor an oily effect on the hair. SIMULGEL EG is suitable for both rinse off and non-rinse hair products.

Refer to SEPPIC formula no. 6653 at the end of this document: restructuring hair gel care for dry and damaged hair

Also refer to SEPPIC formula no. 6780A : repairing cream for stressed and damaged hair, RINSE-OFF

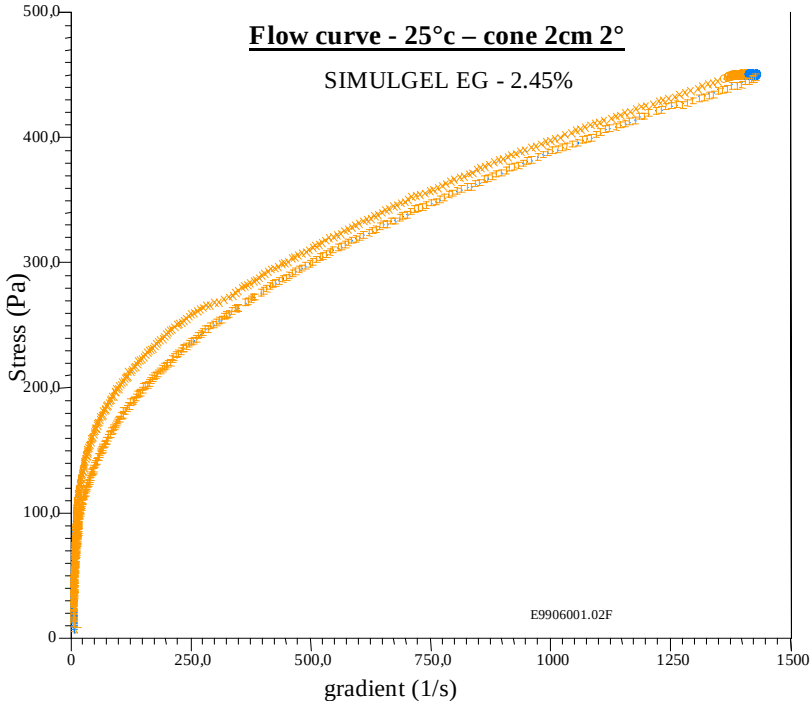
6 – SIMULGEL EG : rheological profile

The series of rheological studies carried out on aqueous SIMULGEL EG gels provides key information about their formulation behaviour.

6.1 – Flow behaviour

The flow curves characterize the behaviour of the gels under shear, that is, while they are being used (transport, mixing, removal from packaging, spreading, etc.).

Graphe n°6 : Assessment of the viscosity as a function of the shear rate
Flow curve



Formula testéd : SIMULGEL EG 2,45 % (= qs 70 000 mPa.s) / water qs 100 %

⇨ Aqueous SIMULGEL EG gels have a distinct **shear thinning behaviour**.

⇨ They are also **non-thixotropic**, that is they recover their viscosity instantly after removal of the shear.

SIMULGEL EG can be used to stabilize sprayable formulas (refer to SEPPIC formulas 6773B, 6620B, 6792A)

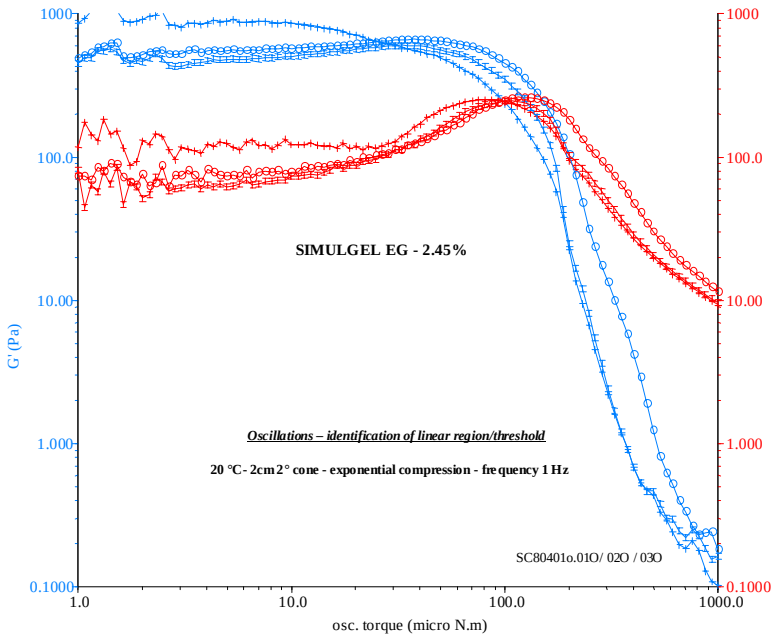
⇨ The graph also shows that aqueous gels based on SIMULGEL EG have a very **low yield stress** (mean value about 7 Pa) ⇒ they are very easy to use (problem-free flow from any type of packaging : tube, pump, spray, etc.).

⇨ From the aqueous gel flow curve, mathematical analysis (power law) can be used to calculate a consistency index, which is related to the actual viscosity of the gel in the complete absence of shear.
This provides information about the visual perception of the product by the consumer.
The consistency index K measured on an aqueous SIMULGEL EG gel is high (K=51): the gels obtained with SIMULGEL EG are particularly **firm** gels. SIMULGEL EG is recommended when formulas with a certain consistency need to be obtained.

6.2 – Viscoelastic behaviour

Aqueous SIMULGEL EG gels at rest show a marked predominance of elastic behaviour, as illustrated by the curve below.

Graphe n°7: Viscoelastic properties of an aqueous SIMULGEL EG gel at rest.



Formula tested: SIMULGEL EG *2.45% (= qs 70,000 mPa.s / water qs 100%)*

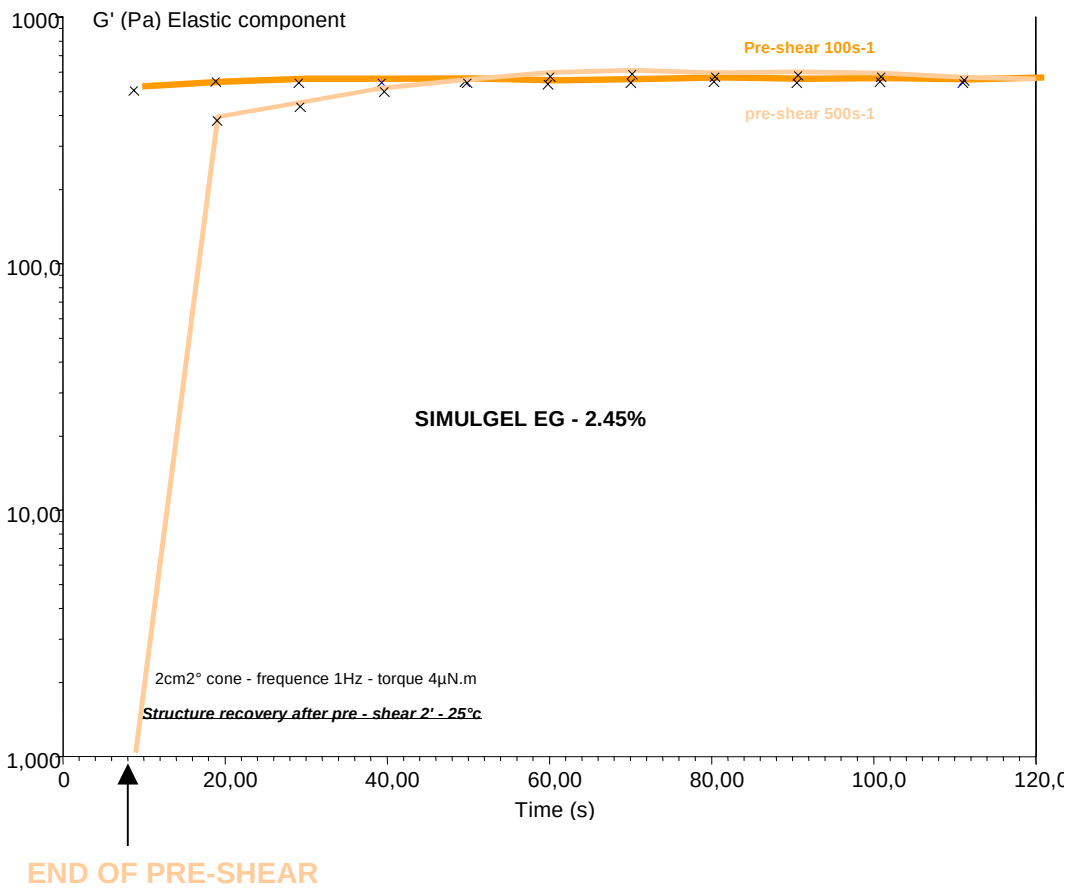
This predominantly elastic behaviour, stable over time and insensitive to temperature variations, explains the excellent stabilizing power of SIMULGEL EG, even at high temperatures.

6.3 – Structure recovery after shear

Monitoring of the viscoelastic properties of a gel after shear application enables prediction of its capacity to recover its initial structure.

This aqueous SIMULGEL EG gel, subjected to high shear (100 s^{-1} and 500 s^{-1} for 2 min) always shows complete recovery of structure. Within a few seconds the gel recovers 100% of its elastic properties.

Graphe n° 8: Structure recovery time after shear.



Formula tested : SIMULGEL EG *2,45 % (= qs 70,000 mPa.s) / water qs 100 %*

SIMULGEL EG is thus completely insensitive to high shear, which gives it very high versatility of use in cosmetic formulation.

7 – FORMULATION ADVICE

7.1 – How to use SIMULGEL EG

SIMULGEL EG fully withstands shear and high temperatures. This property offers great freedom in the use of the product.

7.1.1 - In emulsion

SIMULGEL EG performs well when added at the end of emulsification under high temperature (≅ 70-75 °C).
SIMULGEL EG can also be added at the beginning of the process in the oil or aqueous phase.

7.1.2 - In gel-cream

SIMULGEL EG can be introduced either in the oily phase or in the aqueous phase: its performance in terms of texture and stability is similar whatever the process.
However, the stirring step needs **less energy** when SIMULGEL EG is introduced in the oily phase. In this case, the polymer is "diluted" in the oily phase and the process of reversal and "swelling" is greatly facilitated.

Note: If you choose to add SIMULGEL EG to the oily phase of the gel-cream, it is important to check beforehand that this phase does not contain any strongly hydrophilic ingredient which might cause early reversal of the polymer (examples: phenoxyethanol, OMC, etc.). We advise to add these hydrophilic ingredient after SIMULGEL EG

7.1.3 – In solvent content gel

It is advisable to prepare the aqueous gel first and then add the solvent gradually, without stirring.

7.2 – Working concentration

In emulsions, when SIMULGEL EG is used as a thickener–stabilizer, its concentration can be **0.5% to 2%** depending on the nature of the other ingredients of the formula.

In gel-cream, when SIMULGEL EG is used as the sole emulsifier in the formula, its concentration can be between **1% and 5%** depending on the nature of the other ingredients of the formula.

7.3 – Synergistic combination in electrolyte - rich media

When the conductivity of the medium is too high, the thickening capacity of SIMULGEL EG is affected. To recover full capacity, synergistic combinations are recommended, for example with celluloses, xanthan gum, guar gum, vinyl polymers or any other type of polymer.

8 – TECHNICAL DATA

8.1 – Toxicological data

HET-CAM

SIMULGEL EG has been tested at 5% dilution in water using the HET-CAM technique (method published in the French *Journal officiel* on 26/12/1996).

→ Under these conditions, SIMULGEL EG is classified as **non-irritant** with a score = 0 (SEPPIC expert report HET-CAM 1603)

RBCA

- Haemolytic power

The haemolytic power of SIMULGEL EG on red blood cells was determined using the technique published by INVITTOX no. 37.
The test consists of producing a dose-response curve and determining the product concentration causing lysis of 50% of red blood cells. This value is L.
In the case of SIMULGEL EG, diluted to 5%, L>1000 µl is obtained: SIMULGEL EG is classified as **non-haemolytic**.

- Denaturing power

The denaturing power is assessed by measuring the degree of denaturation of oxyhaemoglobin. This effect, secondary to the haemolysis, provides information about the alteration of intracellular proteins.
SIMULGEL EG, diluted to 5%, was assessed according to this criterion in accordance with the INVITTOX 37 recommendations. The denaturation index obtained was 0%; consequently SIMULGEL EG is considered to be **non-denaturing**.

→Tested according to the RBCA technique**,** SIMULGEL EG, diluted to 5%, is classified as **non-irritant** with an L/D ratio > 100 (SEPPIC expert report RBCA 653).

Patch test

SIMULGEL EG was tested in an occlusive patch test for 24 hours on 60 healthy volunteers, diluted to 3% and 5% in water.

→ Tested under these conditions, SIMULGEL EG *is classified as* ***non-irritant*** (BIO-HC expert report summary SIMULGEL EG).

Sensitization

SIMULGEL EG was tested at a concentration of 6% in water in a patch test on 50 healthy volunteers, according to the protocol of MARZULLI and MAIBACH.

- *Induction phase*

9 consecutive occlusive epicutaneous applications for 48 hours on the same area of a 6% dilution of SIMULGEL EG in water (approximately 160 µl per volunteer)

- *Rest phase*

15 days without any application

- *Challenge phase*

Single occlusive epicutaneous application (approximately 160 µl per volunteer) for approximately 48 hours of a 6% dilution of SIMULGEL EG in distilled water.

→ Under these experimental conditions, SIMULGEL EG **did not cause any primary or cumulative irritation reaction or skin sensitization** (EVIC CEBA expert report IF 037/99.0237).

8.2 - Analytical data

ANALYSIS	LIMIT-TYPE	METHOD
Appearance	Translucent emulsion	S 52 180 A
Dry extract	44% - 47%	Thermobalance 2 g 1 h – 150 °C
Viscosity at 25 °C in mPa.s (2% aq. gel)	55,000 – 80,000	SEPPIC 52-271 A
Viscosity as is at 25 °C in mPa.s	1,000 – 4,500	Brookfield RVT M3V20
pH (2% aq. gel)	5.0 – 7.0	NFT 73.206

Note: The following values are given for guidance only; only the certificate of analysis supplied with each batch guarantees the product specification.

8.3 - Regulatory data

INCI name : Sodium acrylate/Sodium Acryloyldimethyl taurate copolymer/Isohexadecane/Polysorbate 80

CAS no. : 77019-71-7/4390-04-9/9005 –65 - 6

ELINCS no. : Polymers and Polysorbate 80 not applicable
Isohexadecane 224-506-8

9 - APPLICATIONS

SIMULGEL EG is a formulator's essential partner for cosmetic formulation. It can be used easily in the development of gels, gel-creams and simple or multiple emulsions.

SIMULGEL EG can be used in numerous applications:

- foundations, coloured gels,
- sun and after-sun products
- mascaras,
- cleansing lotions,
- baby lotions,
- skin care products,
- products with heat-sensitive or pH-dependent active ingredients
- skin whitening products
- self-tanning products
- bleaching agents
- hair colouring products
- gel-creams, emulsion-gels, etc.

« GOOD MORNING » TONIFYING CREAM GEL
6811

Formula

A	• Water • Glycerin • **MICROPEARL M305** *(Methylmethacrylate crosspolymer - SEPPIC)* • **SEPITONIC M3** *(Magnesium aspartate & Zinc gluconate & Copper gluconate – SEPPIC)*	QSP 100% 02.50 % 01.00 % 01.00 %
B	• Isononyl isononanoate • Cyclomethicone • **SIMULGEL EG** (*Sodium acrylate/Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)*	05.00 % 02.50 % 03.00 %
C	• Fragrance • **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • **SEPICIDE CI** (*Imidazolidinyl urea - SEPPIC)*	00.10 % 00.30 % 00.20 %

Procedure

Disperse SIMULGEL EG in oils. Mix ingredients in A. Introduce B into A with a dispersing turbin. Add fragrance and preservatives in the swolen gel.

Comments

SEPITONIC M3

Multimineral chrono-energizer. Its zinc, copper and magnesium content helps stimulate the cells by increasing the energy profile (Pyruvate, ATP) and overall metabolism (DNA, proteins). Ideal for tired skin, SEPITONIC M3 delivers the elements needed for cell dynamism and the maintenance of skin function. It works to stimulate cell regeneration and helps restore fresh, radiant skin.

SIMULGEL EG

Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization). SIMULGEL EG produces gel-creams with a rich, silky texture that are easy to apply and rapidly absorbed by the skin. SIMULGEL EG emulsifies all types of oil phase without heating to produce gel-creams with a rich, silky texture that are easy to apply and rapidly absorbed by the skin. SIMULGEL EG is compatible with acid pH formulas.

MICROPEARL M305

Consisting of smooth, ultra-soft microspheres that do not dry out the skin, MICROPEARL M305 gives emulsions and gel-creams a slightly powdery feel. The greater the percentage of MICROPEARL M305, the more pronounced the powdery feel. Due to its excellent hydrodispersibility, MICROPEARL M305 can be used in 10 to 15% concentrations with no problem of dispersion or agglomeration. MICROPEARL M305 also contributes to the matifying effect of the formula by eliminating the phenomena of specular reflection.

Characteristics

Appearance	White shiny gel
pH	6.2
Viscosity	73000 cps BROOKFIELD LV4 6rpm
Stability	Stable at RT/40/50 and after freeze-thaw cycles -5/+40°C Stable when centrifuged 50°C 20' 3000rpm

Notes

Isononyl isononanoate (STEARINERIE DUBOIS supplied by SEPPIC Inc)
Cyclomethicone : DC345 (DOW CORNING)
Fragrance : FOREVER K465.316 (QUEST)

ANTIAGEING SMOOTHING COMFORT CARE
6848

Formula

A	• Aqua/Water • Butylène glycol • Caffeine	20.00 % 2.50 % 0.50 %
B	• Aqua/Water • **MICROPEARL M305** *(Methylmethacrylate crosspolymer - SEPPIC)*	Qsp 100% 5.00 %
C	• Cyclomethicone • Dimethicone/Vinyl dimethicone crosspolymer • **SIMULGEL EG** *(Sodium acrylate/Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)* • **SIMULGEL NS** *(Hydroxyethylacrylate/sodium acryloyldimethyltaurate copolymer & squalane & polysorbate60 - SEPPIC)*	35.00 % 5.00 % 0.70 % 0.70 %
D	• Dimethicone • **SEPILIFT DPHP** *(Dipalmitoyl hydroxyproline - SEPPIC)*	5.00 % 0.50 %
E	• **SEPIVINOL R** *(Wine extract – SEPPIC)* • Parfum/Fragrance	0.01 % 0.20 %
F	• **EUXYL K700** *(Phenoxyethanol & benzyl alcohol & potassium sorbate - distribué par SEPPIC)*	1.00 %

Procedure

Disperse caffeine (after a grinding step) into the butylene glycol. Then introduce 20% of hot water (90°C) in order to solubilize the caffeine. Transfer A into the main tank, and add complementary water. Disperse MICROPEARL into this blend. Prepare C by mixing the silicones. When homogeneous, introduce the SIMULGEL latex. Melt SEPILIFT apart in the dimethicone. Emulsify successively C and D into the water phase then add SEPIVINOL and fragrance. Start homogenizing (6' for a 2kg batch). Introduce the preservative then emulsify again for 4'.

Comments

SIMULGEL NS Thickening and emulsifying agent in very easy to use liquid form (no pre-dispersion or neutralization). SIMULGEL NS emulsifies all types of oily phases without heating: cream gels with a fresh texture that melts on contact with the skin are obtained.

SIMULGEL EG Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization). SIMULGEL EG emulsifies all types of oil phase without heating to produce gel-creams with a rich, silky texture that are easy to apply and rapidly absorbed by the skin.

SEPIVINOL R	Purified bioactive polyphenols derived from red wine, these phytomolecules help combat the phenomena of aging due to their anti-free radical action.
SEPILIFT DPHP	Plant-derived hydroxyproline "Lipovector". An anti-wrinkle ingredient, it moisturizes the skin and reduces the appearance of visible signs of aging (effectiveness proven in vivo). SEPILIFT DPHP firms skin tissues by stimulating the contraction of the collagen fibers. It protects dermal fibers from enzymatic lysis and exerts an anti-free radical action.

Characteristics

Aspect	Fluid light pink gel
pH	5.5
Viscosity	20,000 mPa.s BROOKFIELD LV4 6rpm
Stability	Stable at room temperture/40/50 Stable after freeze-thaw cycles -5/+40°C Stable when centrifuged at 50°C 20' 3000rpm

Notes

Cyclomethicone : DC 345 (DOW CORNING)
Dimethicone/Vinyl dimethicone crosspolymer : DC9506 (DOW CORNING)
Dimethicone : DC200.350 (DOW CORNING)
Fragrance : NINA X018.434 (QUEST)

BODY ENERGIZER
6810

Formula

A	• Water • Glycerin • **MICROPEARL M305** *(Methylmethacrylate crosspolymer - SEPPIC)* • **SEPITONIC M3** *(Magnesium aspartate & Zinc gluconate & Copper gluconate – SEPPIC)* • **MONTANOV L** *(C14-22 Alcohol & C12-20 Alkyl glucoside – SEPPIC)*	QSP 100% 03.00 % 05.00 % 01.00 % 04.00 %
B	• Isononyl isononanoate • **SIMULGEL EG** *(Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)*	04.00 % 01.00 %
C	• Cyclomethicone • Fragrance • **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • **SEPICIDE CI** (Imidazolidinyl urea – SEPPIC)	12.00 % 00.10 % 00.30 % 00.20 %

Procedure

Heat water to 80°C, then introduce ingredients in A and maintain heat untill MONTANOV L has totally melted (A). Heat the ester to 80°C and disperse SIMULGEL into this phase (B). Poor B into A and then start the homogenizer (approx 4'). Allow to cool under moderate stir. At 40°C, add ingredients in B with a new « 4' » homogenization step.

Comments

SEPITONIC M3

Multimineral chronoenergizer. Its zinc, copper and magnesium content helps stimulate the cells by increasing the energy profile (Pyruvate, ATP) and overall metabolism (DNA, proteins). Ideal for tired skin, SEPITONIC M3 delivers the elements needed for cell dynamism and the maintenance of skin function. It works to stimulate cell regeneration and helps restore fresh, radiant skin.

MONTANOV L

Glucolipid emulsifier in harmony with nature. MONTANOV L is especially useful to produce fluid formulas whatever the type or quantity of oil phase used. MONTANOV L has a shear-thinning profile that is stable over time. It offers easy stabilization in the presence of hydrosoluble active ingredients that are rich in electrolytes. MONTANOV L can promote liquid crystals according to the emulsion diagram, creating water reservoirs within the emulsion to help maintain skin moisturization.

MICROPEARL M305

Consisting of smooth, ultra-soft microspheres that do not dry out the skin, MICROPEARL M305 gives emulsions and gel-creams a slightly powdery feel. The greater the percentage of MICROPEARL M305, the more pronounced the

	powdery feel. Due to its excellent hydrodispersibility, MICROPEARL M305 can be used in 10 to 15% concentrations with no problem of dispersion or agglomeration. MICROPEARL M305 also contributes to the matifying effect of the formula by eliminating the phenomena of specular reflection.
SIMULGEL EG	Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization). SIMULGEL EG produces emulsions with a rich, silky texture that are easy to apply and rapidly absorbed by the skin.

Characteristics

Appearance	white lotion
pH	6.2
Viscosity	7000 cps BROOKFIELD LV3 6rpm
Stability	stable at RT/40/50 and after freeze-thaw cycles -5/+40°C stable when centrifuged 50°C 20' 3000rpm

Notes

Isononyl isononanoate (STEARINERIE DUBOIS supplied by SEPPIC Inc)
Cyclomethicone : DC345 (DOW CORNING)
Fragrance : NIVE (G92.27190 - ROBERTET)

SPRAYABLE LOTION
6620B

Formula

A	• Water • **MONTANOV L** *(C14-22 alkylalcohol and C12-20 alkylglucoside - SEPPIC)* • Caprylic capric triglyceride • **SIMULGEL EG** (*Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)*	QSP 100 % 2.50 % 7.50 % 0.40 %
B	• **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butyl paraben – SEPPIC)* • **SEPICIDE CI** *(Imidazolidinyl urea – SEPPIC)*	0.30 % 0.20 %

Procedure

Heat the water to 75-80°C and add the MONTANOV L. Continue heating until the emulsifying agent is completely dissolved. Introduce the pre-heated oil then start the mixing head (rotor/stator emulsifier). After 1or 2 minuts, add the SIMULGEL EG. Maintain homogenization during 4' (DUMEK 2kg vit 2). At 60°C establish the vacuum and continue cooling steadily. At the end of cooling (30°C), add the preservatives.

Comments

MONTANOV L — An eco-emulsifying agent which is ideal for generating formulations which are relatively to very fluid. Efficient stabilization even at very low viscosity. MONTANOV L may generate liquid crystals in certain emulsification processes and in certain kinds of emulsion, as is the case for formula 6620

SIMULGEL EG — Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization).

Characteristics

Appearance	white milk
Viscosity	about 1100 mPa.s BROOKFIELD LV M2 6rpm
pH	about 6.5
Stability	stable at AT/40/50°C
Sprayability	4841mm² (blank with water=4653mm² - method 57CO036) – standard deviation 8%

SUN SPRAY SPF 10 broad spectrum
6773B

Formula

A	• Caprylic / capric triglyceride • Ethyl hexyl methoxycinnamate • Butyl methoxy dibenzoylmethane	7.00 % 8.50 % 1.50 %
B	• **SIMULGEL EG** *(Sodium acrylate/ Sodium acryloyldimethyltaurate copolymer and Isohexadecane and Polysorbate 80 - SEPPIC)*	0.70 %
C	• **MONTANOV L** *(C14-22 alcohol and C12-20 alkylglucoside - SEPPIC)* • Tetrasodium EDTA • Water	2.50 % 0.05 % QSP 100%
D	• **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butyparaben – SEPPIC)* • DL alpha tocopherol • Fragrance	1.00 % 0.05 % 0.10 %

Procedure

Heat A to 75°C. Introduce MONTANOV L in hot water (75°C : Phase C) and continue heating until the emulsifying agent is completely melted. Add A in C, then start homogenizer. Introduce SIMULGEL and continue the homogenization step for a few minutes. Allow to cool under moderate stir. At 40°C, add the components of phase D.

Comments

MONTANOV L Glucolipid emulsifier in harmony with nature. MONTANOV L is especially useful to produce fluid formulas whatever the type or quantity of oil phase used. MONTANOV L has a shear-thinning profile that is stable over time and well-adapted to the formulation of sprayable emulsions. MONTANOV L can promote liquid crystals according to the emulsion diagram, creating water reservoirs within the emulsion to help maintain skin moisturization.

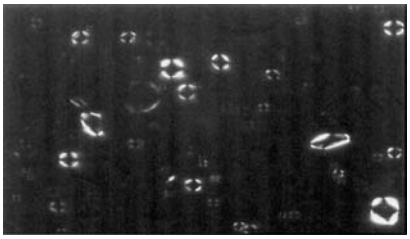
SIMULGEL EG Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization).

SEPICIDE HB Preservative

Characteristics

Appearance	White fluid emulsion
pH	About 7
Viscosity	About 2,500 mPa.s BROOKFIELD LV2 6rpm
Stability	Stable at RT/40°C/ 50°C and after freeze-thaw cycles -5 / +40°C

Evaluation

Polarized light optical microscope image of liquid crystals	
Sun protection factor	***SPF - in vitro (after 1 month): 9 ± 1*** *(SEPPIC protocol 57CO033 : support Vitroskin®, spectrophotometer LABSPHERE®)* ***SPF - in vivo (after 1 month) : 10 ± 1*** *(5 volunteers – report DERMSCAN 100691)*
Rheological study : estimated viscosity under a high shear rate (around 2000 to 5000 s^{-1})	*15 to 20 mPa.s* *(Flow curve – cone 4cm 2°- 25°c)* ***Thanks to that very low viscosity under a high shear rate (corresponding to the shear rate applied by the spray nozzle), the sprayability of that formulation is excellent.***
Sprayability test (57CO036)	*3879 mm²*

Notes

Fragrance : VAHINE X010.030 (QUEST)
Octinoxate / Ethyl hexyl methoxycinnamate: UVINUL MC80 (BASF)
Avobenzone/ Butyl methoxy dibenzoylmethane : PARSOL 1789 (GIVAUDAN ROURE)

LONG-WEARING FOUNDATION
6755C

Formula

A	• Aqua/Water • Butylene glycol • PEG-400 • Titanium dioxyde • Iron oxyde yellow • Iron oxyde red • Iron oxyde black • **PROTEOL OAT** *(Sodium lauroyl OAT aminoacids -SEPPIC)*	10.00 % 4.00 % 4.00 % 2.00 % 0.80 % 0.30 % 0.05 % 1.50 %
B	• Isononyl isononanoate • Caprylic capric triglyceride • **SEPIFEEL ONE** *(Palmitoyl proline / Magnesium palmitoylglutamate / Sodium palmitoyl sarcosinate – SEPPIC)* • **SIMULGEL EG** *(Sodium acrylate/ Sodium acryloyldimethyltaurate copolymer and Isohexadecane and Polysorbate 80 - SEPPIC)* • Cyclomethicone	4.00 % 4.00 % 1.00 % 3.00 % 4.00 %
C	• Aqua/Water • **MICROPEARL M305** *(Methylmethacrylate crosspolymer - SEPPIC)* • Tetrasodium EDTA	QSP 100% 2.00 % 0.05 %
D	• **CAPIGEL 98** *(Acrylates Copolymer - SEPPIC)* • Aqua/Water • Sodium hydroxide	0.50 % 10.00 % qs pH=7
E	• **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butyl paraben – SEPPIC)* • **SEPICIDE CI** *(Imidazolidinyl urea - SEPPIC)* • Parfum/Fragrance	0.30 % 0.20 % 0.20 %

Procedure

Crush the pigment phase with a glass bead grinder (prepare excess to take losses into account). Melt the SEPIFEEL in the esters and then dilute the SIMULGEL A in this mixture and add the cyclomethicone (B). Disperse the MICROPEARL into the water with the EDTA (C) then generate the gel by mixing (B) and (C). Dilute the CAPIGEL into the water (D), add this mixture to the gel then neutralise to ph 7-7.2 using the sodium hydroxide. Finally add the pigment phase (A) followed by the component of D. Adjust final pH if necessary.

Comments

SEPIFEEL ONE Enhances the texture of the product and reduces its "damp" feel without making it greasy. Leaves a long-lasting film which helps maintain the powdery quality of the formulation..

SIMULGEL EG	An easy-to-use thickening and emulsifying agent which igives gel creams with a silky smooth texture but which are nevertheless easy to apply and rapidly absorbed into the skin.
CAPIGEL 98	CAPIGEL 98 is particularly suitable for use together with SIMULGEL EG to generate smooth, soft, shiny tinted creams.
MICROPEARL M305	A non-drying powder which readily disperses in water to make tinted creams more spreadable and give them a satin-like feel. For a more powdery quality, the concentration of MICROPEARL M305 can be increased. By suppressing specular reflection phenomena, MICROPEARL M305 imparts a matte finish to the formula.
PROTEOL OAT	An oat aminoacid based surfactant which is used here as a wetting agent for pigments and fillers.

Characteristics

Appearance	cream
pH	7.2
Viscosity	43000 BROOKFIELD LV 6rpm S4 mPa.s stable at RT/40/50°C control of a film on a bristol card: homogenous if fillers and pigments are well dispersed.

Notes

Iron oxyde yellow: SICOVIT yellow 10 E172 (BASF)
Iron oxyde red: SICOVIT red 30 E172 (BASF)
Iron oxyde black: SICOVIT (BASF)
Titanium dioxyde: Anatase titanium dioxyde USP (WHITTAKER)
Cyclomethicone: DC345 (DOW CORNING)
Fragrance: BEAUTY X010.494 (QUEST)

OIL FREE SELF TANNING GEL FACE
6617A

Formula

A	• **SIMULGEL EG** *(Sodium acrylate/ Sodium acryloyldimethyltaurate copolymer and Isohexadecane and Polysorbate 80 - SEPPIC)* • Coco caprylate caprate	3.00 % 3.00 %
B	• Water • Dihydroxyacetone	QSP 100 % 3.00 %
C	• Fragrance • **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • Lactic acid	0.20 % 0.80 % QS pH=5

Procedure

Prepare separately A and B. Add B onto A with moderate stirring. When homogeneous, add fragrance, preservative and adjust pH if necessary.

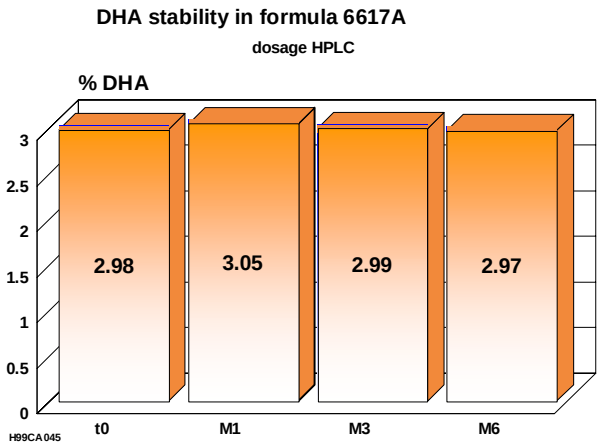
Comments

SIMULGEL EG A gelling/emulsifying agent compatible with DHA*. It comes in a very-easy-to-handle liquid form and gives onctuous non greasy cream gels very simply, without adding any emulsifier.

SEPICIDE HB Preservative.

Characteristics

Appearance	white emulsion
pH	approx. 5
Viscosity	29,000 mPa.s BROOKFIELD LV S4 6rpm
Stability	stable at Room temperature/40/50°C and after freeze-thaw cycles 5°C/+40°C Stable when centrifuged 20' at 3000 rpm 50°C



Notes

DIHYDROXYACETONE (MERCK)
fragrance: SUMMERTIME X010.036 (QUEST)

SATIN DEODORANT SPRAY
6792A

Formulation

A	• Water • **MICROPEARL M201** *(Methyl methacrylate crosspolymer– SEPPIC)*	QSP 100 % 5.00 %
B	• **MONTANOV L** *(C14-22 Alcohol & C12-20 Alkyl glucoside – SEPPIC)*	2.00 %
C	• **SIMULGEL EG** (*Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)*	0.30 %
D	• Cyclomethicone	2.00 %
E	• **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • **SEPICIDE CI** (*Imidazolidinyl urea - SEPPIC)* • Fragrance • Ethyl hexylglycerin	0.30 % 0.20 % 0.15 % 0.50 %

Procedure

Disperse the Micropearl M201 in the water and heat to a temperature of 80°C (phase A). Melt B in A. Introduce the silicon oil (without heating it) then start homogenizing. After 2' introduce C. Continue emulsification for few minuts. When the temperature has dropped to about 40°C, add E.

Comments.

MICROPEARL M201 Absorbent, ultra-soft microspheres which readily disperse in water. The extra-fine size of MICROPEARL M201 particles make this product ideal for spray-on and fluid emulsions.

MONTANOV L Glucolipid emulsifier in harmony with nature. MONTANOV L is especially useful to produce fluid formulas whatever the type or quantity of oil phase used. MONTANOV L has a shear-thinning profile that is stable over time and well-adapted to the formulation of sprayable emulsions. MONTANOV L can promote liquid crystals according to the emulsion diagram, creating water reservoirs within the emulsion to help maintain skin moisturization.

SIMULGEL EG Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization). SIMULGEL EG perfectly stabilizes fluid and even extra-fluid emulsions. Thanks to its rheothinning properties, SIMULGEL EG is useful to formulate sprayable emulsions.

SEPICIDE HB / CI Preservative.

Characteristics

Appearance	Spray-on milk
pH	Approximately 6.7
Viscosity	Approximately 2,000 mPa.s BROOKFIELD LV4 6 rpm
Stability	Stable at TA / 40°C / 50°C

Assessment

Sprayability testing: SEPPIC Method 57CO036 (details supplied on request) :

TESTS PERFORMED on standard packaging (SOFAB . BP10-8700/C180G micromist nozzle)	*RESULTS*
Positive control Distilled water	5859 mm²
6792A	**5275 mm²**

Notes

Fragrance: BASALFRESH G91.32127 (ROBERTET)
Cyclomethicone: DC 345 (DOW CORNING)
Ethyl hexylglycerin: SENSIVA SC50 (distribution by SEPPIC in some countries: ask us)

CLEAR HAIR GLOSS GEL WITH SILICON OILS
6742

Formula

A	• **SIMULGEL EG** *(Sodium acrylate / Sodium acryloyldimethyl taurate and isohexadecane and polysorbate 80 - SEPPIC)* • Cyclomethicone	2.00 % 30.00 %
B	• Water • Propylène glycol • **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butyl paraben - SEPPIC)*	27.5 % 40.00 % 0.50 %

Procedure

Dilute the SIMULGEL EG into the cylcomethicone (A). Mix the water and the glycol (B). Form the gel by mixing A and B then add the SEPICIDE HB. The gel obtained is cloudy. It becomes clear and irridescent after several hours.

Comments

SIMULGEL EG A very easy to use thickening and emulsifying agent which is particularly effective when combined with ethanol, glycerin and glycols. Its emulsifying power with silicon oils means that silicon oil/glycol gels can be formulated which have the characteristic of being transparent when the refraction indices of the of the two phases (silicon oil and glycol) coincide.

Characteristics

Appearance	Irridescent
Viscosity	>100000 mPa.s BROOKFIELD LV M4 6rpm
Stability	stable at room temperature - 40°C - 50°C

Notes

Cyclomethicone: DC345 (DOW CORNING)

RESTRUTURING DRESSING GEL FOR DAMAGED AND DRY HAIR 6653

Formula

A	• Distearoylethyl hydroxyethylmonium methosulfate and cetearyl alcohol • Isononyl isononanoate • **SIMULGEL EG** *(Sodium acrylate/ Sodium acryloyldimethyltaurate copolymer and Isohexadecane and Polysorbate 80 – SEPPIC)*	00.28 % 05.00 % 05.00 %
B	• Water • PVP	QSP 100% 02.00 %
C	• Ethanol • Cetrimonium chloride • **SEPICAP MP** *(Sodium cocoyl aminoacids/potassium dimethicone copolyol panthenyl phosphate - SEPPIC)* • Amodimethicone • **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • **SEPICIDE CI** *(Imidazolidinyl urea - SEPPIC)* • Fragrance	30.00 % 00.70 % 00.50 % 02.00 % 00.30% 00.20% 00.20 %

Procedure

A : mel the wax at 60°c in the oil and introduce Simulgel EG. Dissolve PVP in water. Poor B on A in 3 steps while mixing before adding successively ingredients in C .

Comments

SEPICAP MP — Thermoactive multiprotector for hair that has been stressed or damaged by the sun, blow-drying, pollution or chemical treatments. A biovector of amino acids and panthenol, SEPICAP MP helps combat the harmful effects of oxidative stress. It simultaneously protects the integrity of the hair shaft and root while preventing the formation of scales.

SIMULGEL EG — Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization).

SEPICIDE HB/CI — Preservatives.

Characteristics

Appearance	white cream gel
pH	approx. 6.4
Viscosity	approx 40000 cps LV4 6 rpm
Stability	stable at RT / 40°C / 50°C and after freeze-thaw cycles –4°C / +50°C stable when centrifuged 20' - 50°C -3000 rpm

Notes

Distearoyl hydroxyethylmonium methosulfate and cetearyl alcohol : Dehyquart F75 (Henkel)
PVP : Luviskol K30 (Laserson et Sabatay)
Cetrimonium chloride : Genamin CTAC (Clariant)
Amodimethicone : DC 949 (Dow Corning)
Fragrance : parfum Elsève X010042 (Quest)

SLIMMING GEL
6733B

Formula

A	• Caffeine • Ethanol 95 • Purified water	05.00 % 40.00 % qsp 100%
B	• **SIMULGEL EG** (*Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer/ Isohexadecane/ Sorbitan oleate - SEPPIC)* • Isononyl isononanoate	03.00 % 02.00 %
C	• **SEPICIDE HB** *(Phenoxyethanol/Methylparaben/Ethylparaben/ Propylparaben/Butylparaben - SEPPIC)* • **SEPICIDE CI (***Imidazolidinyl urea - SEPPIC***)** • Fragrance • Dye	00.30 % 00.20 % 00.40 % qs

Procedure

Crush the caffeine with a mortar, then solubilise into the water and alcohol mixture whilst stirring using a magnetic mixer. Add A to B and stir until an homogenous mixture is obtained. Then add C .

Comments

SIMULGEL EG An emulsifying and thickening agent in a liquid, very easy-to-handle form. It is used to formulate cream gels with a high alcohol content (this is an indispensable requirement for effective caffeine solubilisation).

SEPICIDE HB/CI A preservative system.

Characteristics

Appearance	Blue gel
pH	Approximately -6.8
Viscosity	Approximately 50,000 mPa.s BROOKFIELD LVT 6 r.p.m.
Stability	Excellent at RT, 40°C and 50°C and after freeze-thaw cycles (+4°C-40°C/1month)

Notes

Fragrance : PAOLA X018435 (QUEST)
Colour : W6004 (WACKHERR)

PURIFYING PEEL-OFF MASK FOR OILY SKINS
6828

Formula

A	• Polyvinyl alcohol • Water	11.40 % 45.40 %
B	• Ethanol 90 • Water • **SEPICONTROL A5** *(Capryloyl Glycine and Sarcosine and Cinnamon (Cinnamomum Zeylanicum) Extract – SEPPIC)* • **SIMULGEL EG** (*Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 –SEPPIC)* • Glycerin • Fragrance	29.00 % Qsp 100% 2.00 % 5.00 % 5.00 % 00.10 %

Procedure

Disperse the PVA in hot water (95°C) with a suitable mixer, maintain stir until the powder has completely dissolved. Then introduce successively ingredients in B while continuously mixing.

Comments

SIMULGEL EG Agent épaississant et émulsionnant de présentation liquide très facile à utiliser (pas de prédispersion ni de neutralisation). SIMULGEL EG donne des gels de texture soyeuse et onctueuse faciles à appliquer. SIMULGEL EG gélifie des milieux chargés en solvants (éthanol, glycols, acétone ….).

SEPICONTROL A5 Actif pour peaux grasses. Il régule les 5 éléments à l'origine des imperfections cutanées (la prolifération bactérienne, les lipases, la 5 α-reductase, l'inflammation, les élastases, les radicaux libres). La peau devient plus nette, moins grasse et débarrassée de ses imperfections.

Characteristics

Aspect	Peach coloured opaque gel
pH	6.3
Viscosity	70,000 mPa.s BROOKFIELD LV4 6rpm
Stability	Stable at room temperature/40°C/50°C Stable after freeze-thaw cycles –5/+40°C Stable when centrifuged 50°C 20' 3000rpm

Assessment

Drying time of a thin film 30µ (57CO040): 12 à 15'

Notes

Polyvinyl alcohol : POVAL 217 (distribution by SEPPIC in some countries – ask us)

NAIL POLISH REMOVING GEL
6845

Formula

A	• Water	QSP 100%
	• Colour	QS
	• *Glycereth7 triacetate*	1.50 %
	• **SIMULGEL EG** (*Sodium acrylate/ Sodium acryloyldimethyl taurate copolymer & Isohexadecane & Polysorbate 80 -SEPPIC)*	3.00 %
	• Aceton	50.00 %

Procedure

Dissolve the colour and the ester into the water phase. Then disperse SIMULGEL EG under turbulent flow until homogeneous. Progressively incorporate aceton while mixing continuously .

Comments

SIMULGEL EG Thickening and emulsifying agent in liquid form. Very easy to use (no predispersion or neutralization). SIMULGEL EG can be used as a gelling agent in formulas with a high content of solvents (ethanol, glycols, acetone, etc.).

Characteristics

Aspect	translucent blue gel
pH	6.7
Viscosity	11,000 mPa.s BROOKFIELD LV4 6rpm
Stability	stable at ambiant temperature/+4°C Stable when centrifuged 50°C 20' 3000rpm

Notes

Colour : blue azur W6004 (WACKHERR)
Glycereth-7 triacetate (distribution by SEPPIC in some countries – ask us)

SIMULGEL is a SEPPIC trade mark

Nota

The analytical specifications warranted are only those mentioned on the certificate of analysis supplied with each delivery of the product.

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