



# NEOSSANCE®

Hemisqualane

01 09 2015





Part 1: AN EMOLLIENT WITH A GREAT  
SENSORIAL PROFILE

Part 2: VERSATILE APPLICATIONS

Part 3: PROVEN PERFORMANCE

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Part 5: PEACE OF MIND INGREDIENT

# HEMISQUALANE

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*an INNOVATIVE light EMOLLIENT with*

*HIGH SPREADABILITY and a*

*GREAT SENSORIAL PROFILE*



Hemisqualane

**Part 1:**

**AN EMOLLIENT  
WITH A GREAT SENSORIAL PROFILE**



# GREAT SENSORIAL PROFILE FOR ELEGANT TEXTURES

Hemisqualane's sensorial profile provides unique qualities

High spreadability

Silky and light feel

Not greasy

Creates elegant  
textures

Not tacky

Leaves smooth  
skin



IDEAL FOR  
INNOVATIVE NATURAL  
COSMETIC  
FORMULATIONS

PERFECT NATURAL  
ALTERNATIVE for  
PETROLEUM-BASED  
PARAFFIN and  
SILICONE  
INGREDIENTS



# GREAT SENSORIAL PROFILE

## SENSORIAL EVALUATION

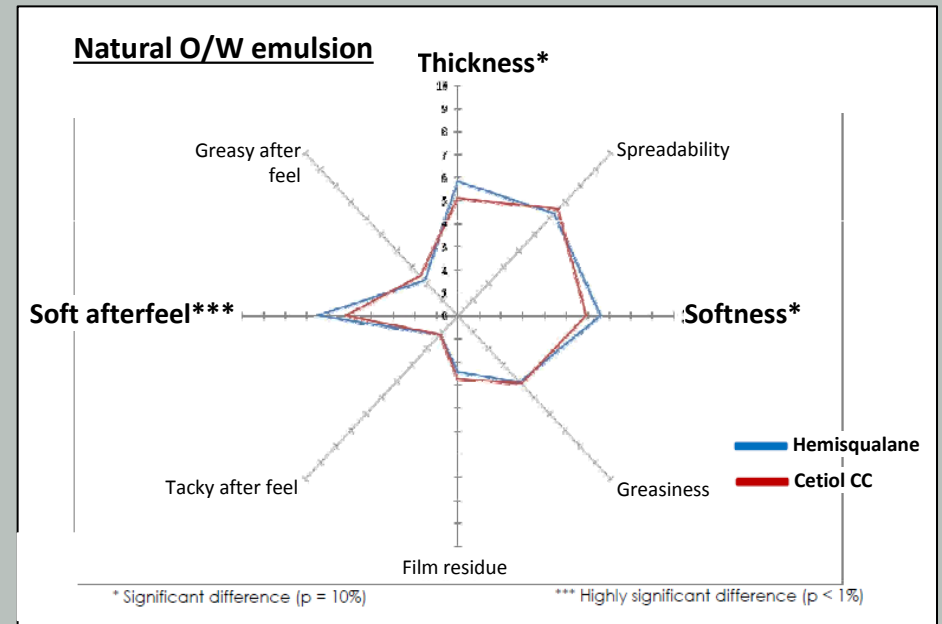
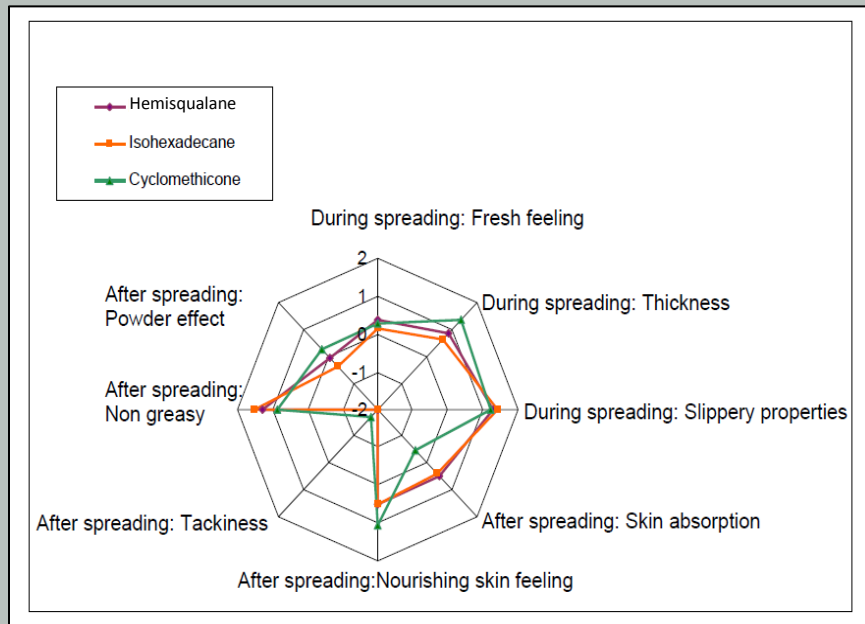


Fig 1 & 2: Sensorial evaluations of Hemisqualane vs. several competitors

This evaluation has been conducted on Gel-creams. Each cream contains 10% of oil (Hemisqualane, Isohexadecane or Cyclomethicone – mixture of cyclopentasiloxane and cyclohexasiloxane).

This evaluation has been conducted on O/W (Oil in Water) emulsions. Each cream containing 15% of Hemisqualane or Cetiol CC (dicaprylyl carbonate)

# GREAT SENSORIAL PROFILE

## SENSORIAL EVALUATION

<b>Creams</b>	<b>Initial Feel</b>	<b>Slip/ Spreadability</b>	<b>Immediate After feel</b>	<b>(Moisturized) after feel after 5 min</b>
Cream #1 <b>Hemisqualane</b>	Rich & creamy	Good, <b>short playtime</b>	<b>Very soft,</b> velvety, imparts <b>moisturized feel</b>	<b>Feel remains</b>
Cream #2 <b>Isohexadecane</b>	Rich & creamy	Good, long playtime	Soft, <b>tacky</b> upon dry down, imparts moisturized feel	Slight feel remains
Cream #3 <b>Cyclopenta- siloxane</b>	Light & creamy	Good, moderate playtime	Soft, <b>does not imparts moisturized feel</b>	Very slight feel remains
Cream #4 <b>Dimethicone (6cs)</b>	Rich & creamy	Good, moderate playtime	Soft, imparts <b>partially</b> moisturized feel	Very slight feel remains

Sensorial evaluation of creams containing 8% of different emollients

The Hemisqualane cream exhibits the best experience of all cream samples:

- Initial feel upon application is rich & creamy with a good slip
- Short playtime is ideal for face and eye creams
- Softest and most velvet-like after feel
- Imparts the best immediate and persistent emollience

**Part 2:**

# VERSATILE APPLICATIONS



# VERSATILE

## APPLICATIONS

	TEXTURE/SENSORIAL PROFILE	PROVEN PERFORMANCE	APPLICATIONS
SKIN CARE	<ul style="list-style-type: none"> <li>• Easy to incorporate into emulsions</li> <li>• Creates luxurious and light textures</li> <li>• Has a good slip and short playtime</li> <li>• Soft, light and silky after-feel</li> <li>• Maintains a persistent emollience on skin</li> <li>• Non greasy and non tacky finish</li> </ul>	<ul style="list-style-type: none"> <li>• Non comedogenic</li> <li>• High spreadability</li> </ul>	<ul style="list-style-type: none"> <li>• Face and body creams, lotions</li> </ul>
HAIR CARE	<ul style="list-style-type: none"> <li>• Brings a good slip and soft after feel</li> <li>• Leaves the hair soft and smooth without weighing it down</li> </ul>	<ul style="list-style-type: none"> <li>• Low friction coefficient</li> <li>• Many in-vitro studies (on hair tresses)</li> </ul>	<ul style="list-style-type: none"> <li>• Hair conditioners, leave-in treatments, anti-frizz and styling products</li> </ul>
CLEANSERS	<ul style="list-style-type: none"> <li>• Soft and light feel</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent cleansing properties</li> </ul>	<ul style="list-style-type: none"> <li>• Facial cleansers, masks, make-up removers including for waterproof formulations</li> </ul>
SUN CARE	<ul style="list-style-type: none"> <li>• Facilitates smooth and even application</li> <li>• Has a good slip and short playtime</li> </ul>	<ul style="list-style-type: none"> <li>• High spreadability</li> <li>• Solubilizes UV filters</li> </ul>	<ul style="list-style-type: none"> <li>• Face and body products including sprays</li> </ul>
MAKEUP	<ul style="list-style-type: none"> <li>• Facilitates smooth and even application</li> </ul>	<ul style="list-style-type: none"> <li>• High spreadability</li> </ul>	<ul style="list-style-type: none"> <li>• Foundations, concealers, lipsticks, lip gloss</li> </ul>
DEODORANT	<ul style="list-style-type: none"> <li>• Brings a good slip, dry feel</li> </ul>	<ul style="list-style-type: none"> <li>• High spreadability</li> </ul>	<ul style="list-style-type: none"> <li>• Roll-on, sticks, sprays</li> </ul>

# EASY TO INCORPORATE IN FORMULATIONS

	Miscible	Non-miscible
<b>Commonly used esters and oils</b>		
C12-15 Alkyl Benzoate	X	
Caprylic/Capric Triglyceride	X	
Safflower Oil	X	
Joboba Oil	X	
Olive Oil	X	
Dimethicone	X	
Cyclopentasiloxane	X	
Deionized Water		X
SDA-40 Alcohol		X
Butylene Glycol		X
<b>Commonly used emulsifiers</b>		
Ceteareth-20	X	
Cetearyl Alcohol	X	
Stearic Acid	X	
Glyceryl Stearate SE	X	
<b>Ancillary Specialty Ingredients</b>		
Octinoxate (Sunscreen)	X	
Oxybenzone (Sunscreen)		X
Avobenzone (Sunscreen)	X	
Titanium Dioxide		X
Zinc Oxide		X

Non polar  
hydrocarbon

Fully saturated

Allows very stable  
emulsions

Compatible with a  
variety of ingredients

Consistent quality  
batch to batch

**Part 3:**

**PROVEN PERFORMANCE**

# NEOSSANCE®

Hemisqualane

1. HIGH SPREADABILITY

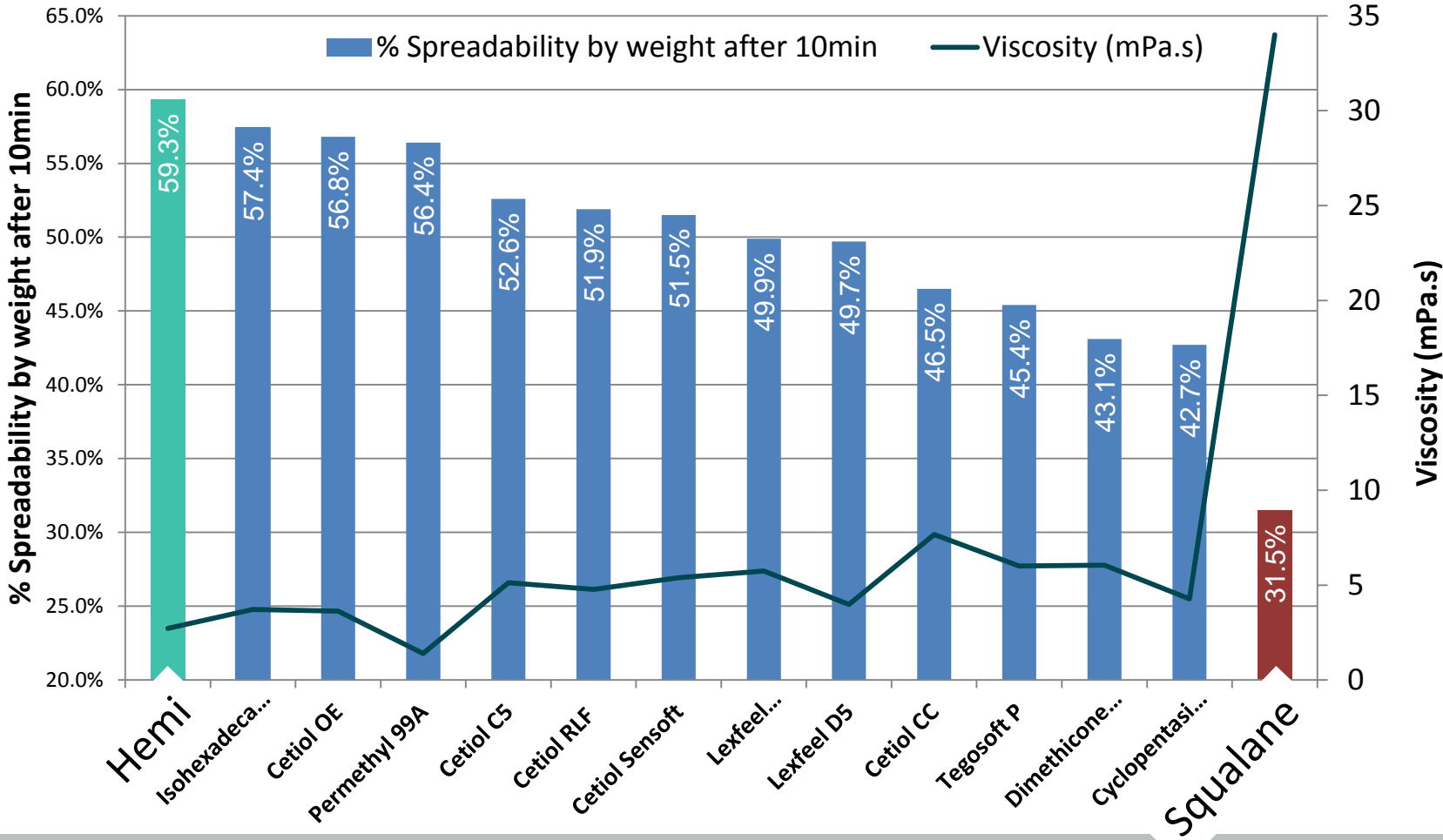
2. SMOOTHING EFFECT/SLIP

3. EXCELLENT CLEANSING PROPERTIES

4. PROVEN PERFORMANCE FOR HAIR-CARE  
APPLICATIONS

# PROVEN PERFORMANCE

## HIGH SPREADABILITY



Spreadability\* & viscosity data for Neossance Hemisqualane (in green), competitor products, and Squalane (in red)

\* Measurements with 19.0cm Dia., Fisher Brand, P5 Filters, Cat No.:09-801-F

# NEOSSANCE®

Hemisqualane

1. HIGH SPREADABILITY

2. SMOOTHING EFFECT/SLIP

3. EXCELLENT CLEANSING PROPERTIES

4. PROVEN PERFORMANCE FOR HAIR-CARE

APPLICATIONS



# SMOOTHING EFFECT / SLIP

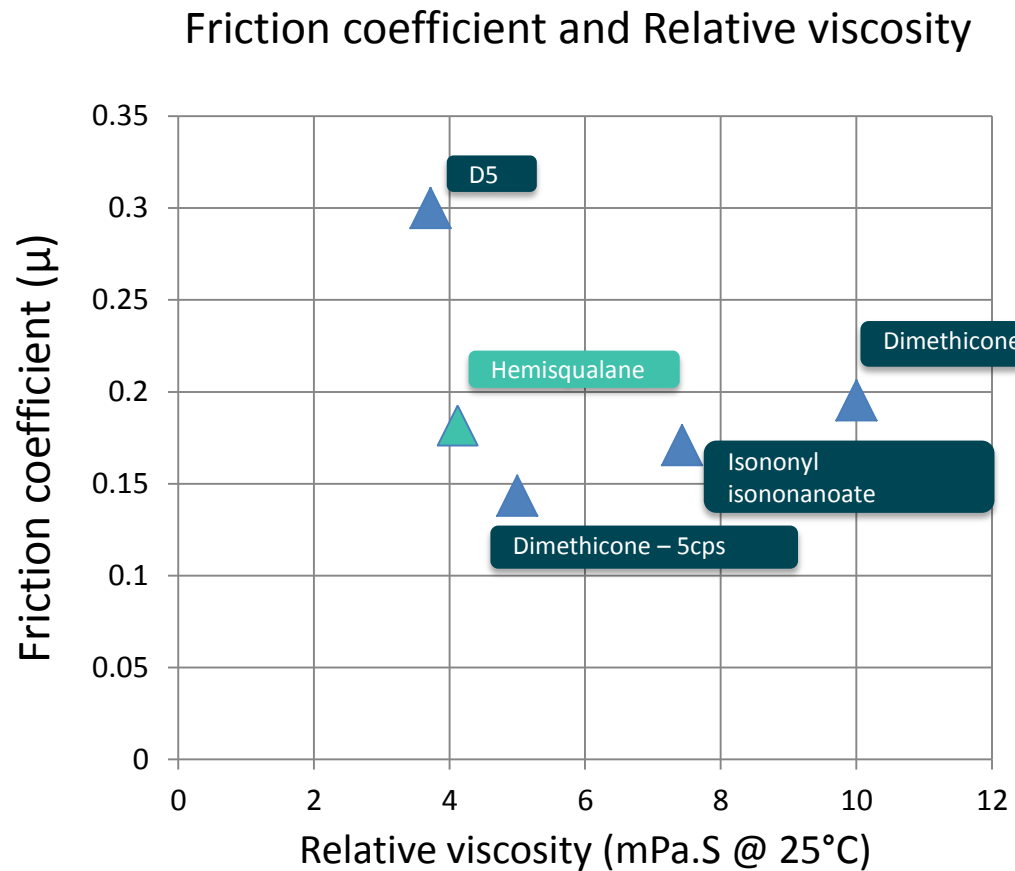


Fig 1. Friction test evaluation (KES-SE frictional analyzer) performed by Nikko Chemicals Co., Ltd.

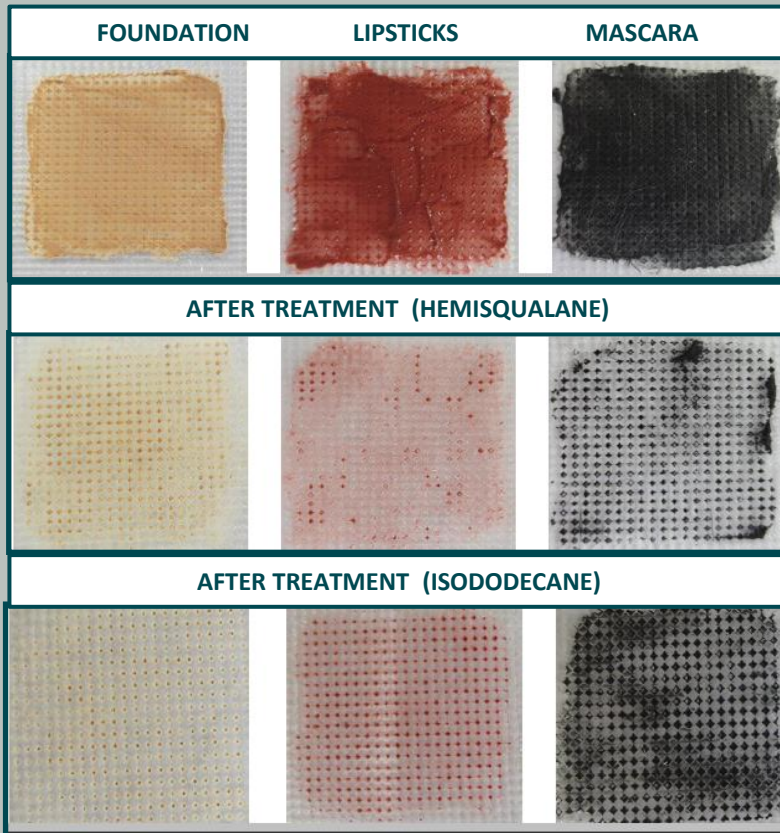
In this study, the friction coefficient was used as the main parameter to indicate the smoothing effect of different ingredients on artificial leather used as alternative to human skin. Although it has the same viscosity as D5, Neossance Hemisqualane has a higher slip (lower friction coefficient).

# NEOSSANCE®

Hemisqualane

1. HIGH SPREADABILITY
2. SMOOTHING EFFECT/SLIP
3. EXCELLENT CLEANSING PROPERTIES
4. PROVEN PERFORMANCE FOR HAIR-CARE APPLICATIONS

# EXCELLENT CLEANSING PROPERTIES



- Neossance Hemisqualane shows high cleansing ability against all the make-up items evaluated (Foundation, Lipsticks, Mascara).
- Isododecane is one of the best cleansing ingredients for mascaras. However, it is petroleum-derived.
- Hemisqualane is a sustainable ingredient and shows better performance to remove mascara compared to Isododecane.

**Fig1:** Evaluation on trans pore tape (Transpore, 3M Health care), performed by Nikko Chemicals Co., Ltd.

# NEOSSANCE®

Hemisqualane

1. HIGH SPREADABILITY
2. SMOOTHING EFFECT/SLIP
3. EXCELLENT CLEANSING PROPERTIES
4. PROVEN PERFORMANCE FOR HAIR-CARE APPLICATIONS

# PROVEN PERFORMANCE IN HAIR CARE

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## **KEY BENEFITS after one treatment with Neossance Hemisqualane (In-vitro studies on hair tresses)**

- **Reduces hair frizz and keeps hair frizz-free**
- **Protects hair from color degradation, helps promote long-lasting color**
- **Helps seal down the cuticles and restores more natural structure of hair, reduces damage**
- **Provides heat protection and prevents damage from heat appliances and hot-styling tools**
- **Provides lubricity on hair allowing easier combing, manageability and enhanced flexibility**
- **Improves elasticity, strengthens the hair and prevents breakage**

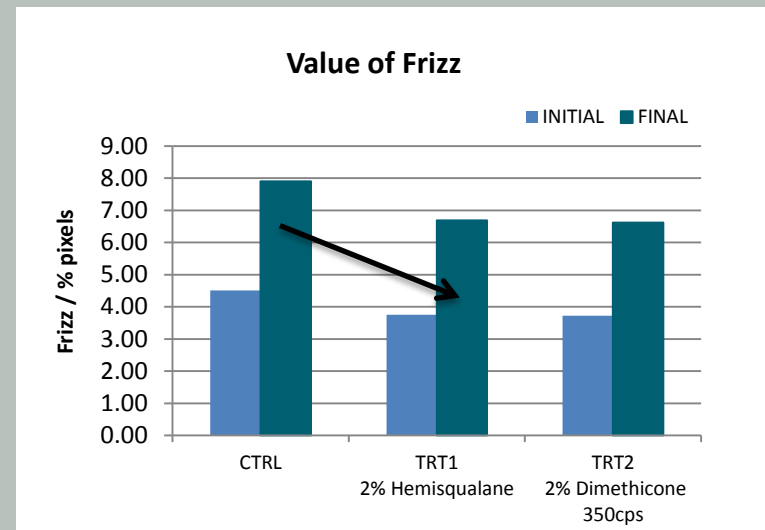
# PROVEN PERFORMANCE

## FRIZZ EFFECT

29% reduction in frizz effect after one treatment with 2% Neossance Hemisqualane  
**Benefits: keeps hair frizz-free, controls frizz**



**Figure 1:** Examples of images converted to black & white binary mode used to determine the Frizz effect by the percentage of black pixels.



**Figure 2:** This graph shows the values of Frizz, F, for the treatments. INITIAL = tresses naturally dried after application of the treatment. FINAL = tresses after 24 hours of exposure to 85% relative humidity.

The tresses submitted to the treatment TRT1 showed no significant difference in Frizz values when compared to the tresses submitted to the treatment TRT2

**=> Hemisqualane provides the same anti-frizz properties as Dimethicone 350cps, a silicone commonly used in anti-frizz treatments**

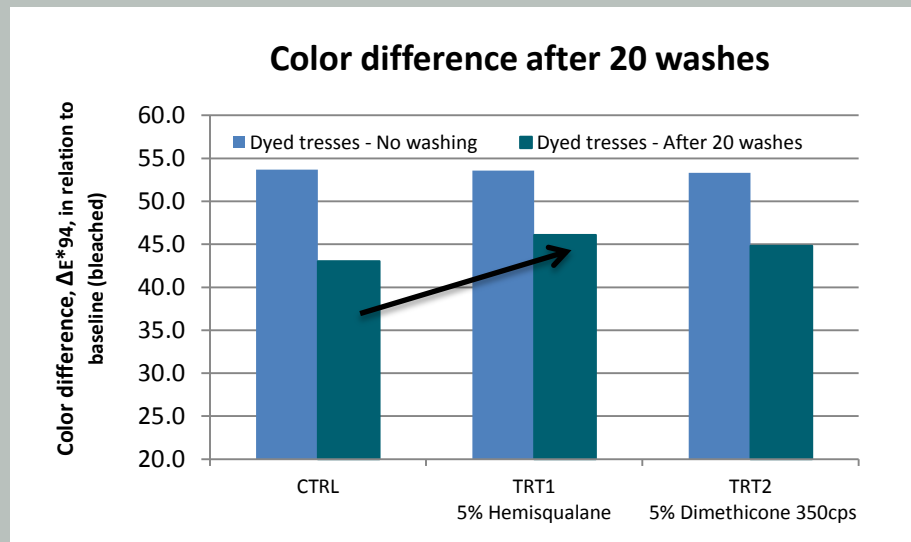
	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No



# PROVEN PERFORMANCE

## COLOR MAINTENANCE

30% difference in color maintenance after one treatment with 5% Neossance Hemisqualane  
**Benefits: color protection, color maintenance, long-lasting color**



This graph shows the color difference ( $\Delta E^*94$ ) after 20 washes in relation to the baseline tresses (bleached tresses, before dyeing).

After 20 washes, the tresses submitted to the treatment TRT1 showed no significant difference in color variation when compared to the tresses submitted to the treatment TRT2  
**=> Hemisqualane delivers the same color protection performance as Dimethicone 350cps, a silicone widely used in color protection treatments**

	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No

# PROVEN PERFORMANCE

## DAMAGE REDUCTION

15% damage reduction after one treatment with 2% Neossance Hemisqualane  
**Benefits: Helps seal down the cuticles, restores more natural structure of hair, reduces damage**

### SURFACE OF HAIR VIA IMAGE ANALYSIS

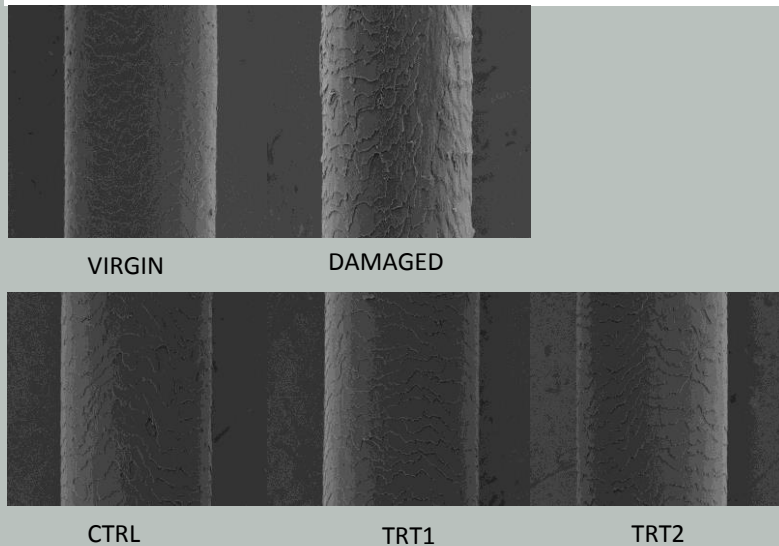


Figure 1: Illustration of detection of fragments and edges via image analysis

	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No

### Damage Reduction

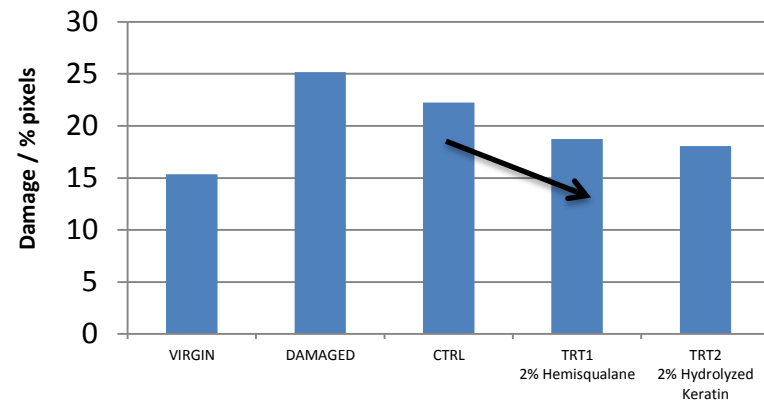


Figure 2: This graph shows the results of percentage damage (raised cuticles, Fragments) detected on hair surface from SEM image analysis.

The tresses submitted to the treatment TRT1 showed no significant difference in damage reduction when compared to the tresses submitted to the treatment TRT2

⇒ **Hemisqualane helps seal down the cuticles as much as Hydrolyzed Keratin, a widely used ingredient in hair care products**

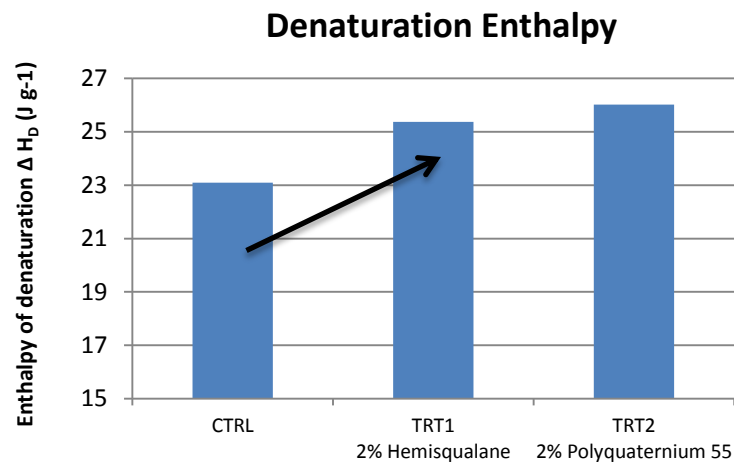
# PROVEN PERFORMANCE

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## THERMAL PROTECTION

8% increase in thermal protection of  $\alpha$ -keratin after one treatment with 2% Neossance Hemisqualane

**Benefits: Provides thermal protection, protects hair from heat appliances and hot-styling tools, prevents damages to the  $\alpha$ -keratin by thermal treatments**



This graph illustrates the  $\alpha$ -keratin denaturation enthalpy in the temperature range between 135°C and 175°C.

The tresses submitted to the treatment TRT1 showed no significant difference in denaturation enthalpy when compared to the tresses submitted to the treatment TRT2

=> **Hemisqualane provides same heat protection as Polyquaternium 55, a polymer used in many thermal protection treatments**

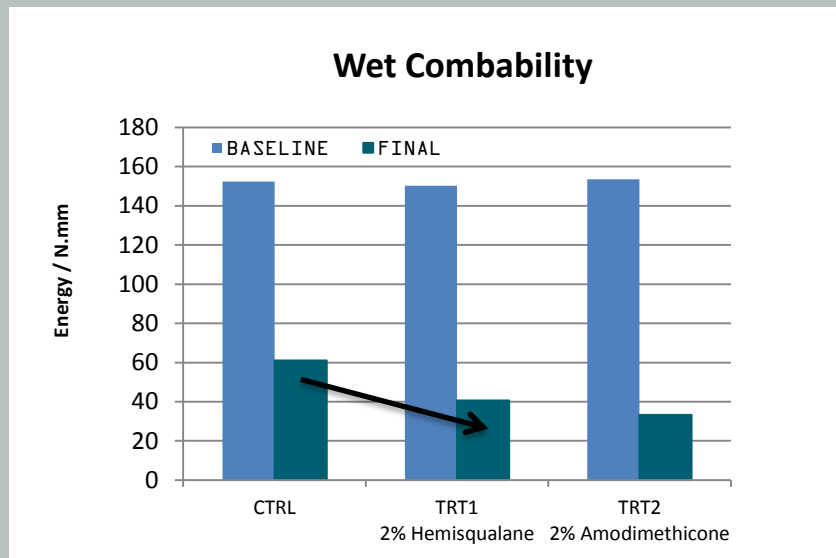
	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No

Note: Purchasers of Hemisqualane from Amyrus are solely responsible for ensuring compliance of their cosmetic products with all applicable regulatory requirements, including claims regarding the effect of Hemisqualane on hair. Neossance Hemisqualane is not to be promoted, sold or used as a drug or other pharmaceutical product.

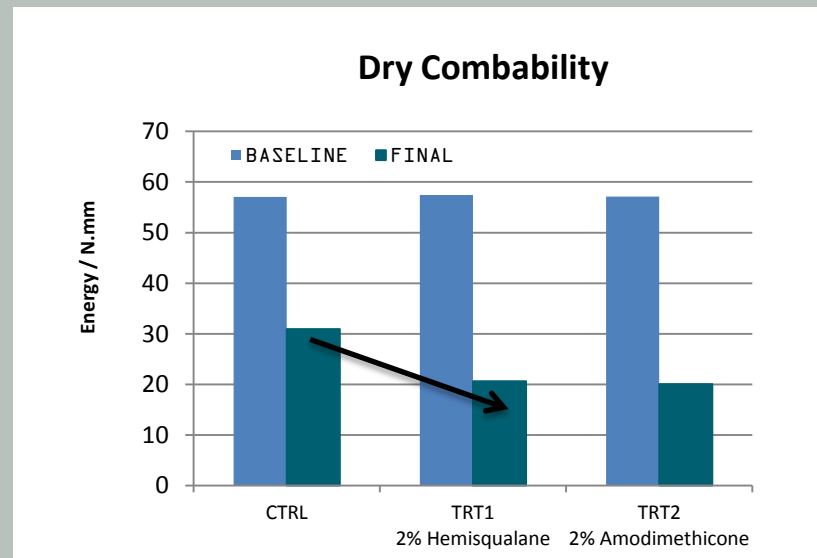
# PROVEN PERFORMANCE

## WET/DRY COMBABILITY

WET combability: -30% of combing energy / DRY combability: -27% of combing energy  
**Benefits: Easy combing, manageability, enhanced flexibility**



**Figure 1:** This graph illustrates the comparison between Energy values of FINAL and BASELINE measurements for WET combability.



**Figure 2:** This graph illustrates the comparison between Energy values of FINAL and BASELINE measurements for DRY combability.

For both WET and DRY combability the tresses submitted to the treatment TRT1 showed no significant difference in combing energy when compared to the tresses submitted to the treatment TRT2  
**=> Hemisqualane provides same reduction in combing energy as Amodimethicone, a silicone well known to improve manageability of hair**

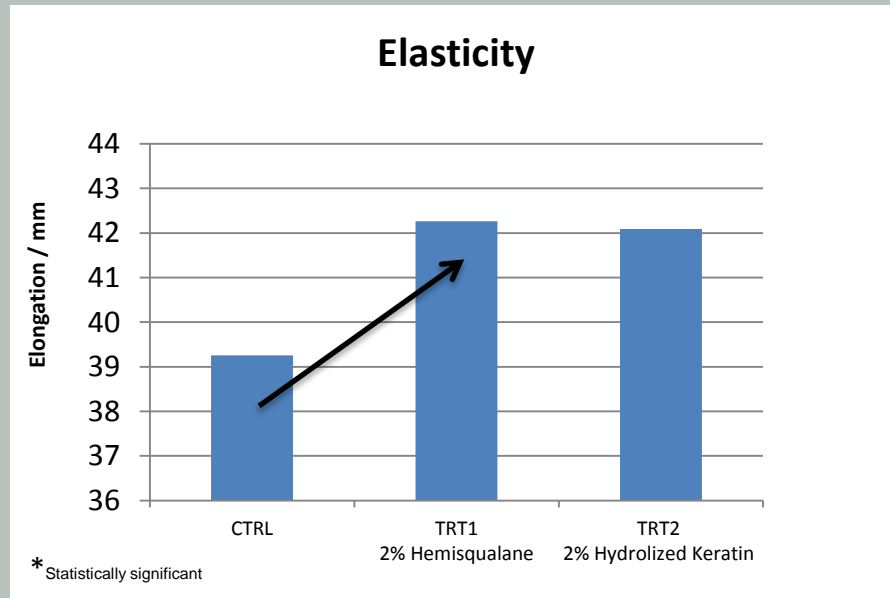
	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No

# PROVEN PERFORMANCE

## ELASTICITY

+ 7% in elongation after one treatment with 2% Neossance Hemisqualane

**Benefits: Improves elasticity, strengthens the hair, prevents breakage**



This graph shows the mean elongation at break

The tresses submitted to the treatment TRT1 showed no significant difference in elongation when compared to the tresses submitted to the treatment TRT2

**=> Hemisqualane increases elasticity as much as Hydrolyzed Keratin, a widely used ingredient in hair care products**

	Significantly different?
TRT1 vs CTRL	Yes
TRT1 vs TRT2	No

**Part 4:**

# TYPICAL PROPERTIES & MANUFACTURING PROCESS



# TYPICAL PROPERTIES

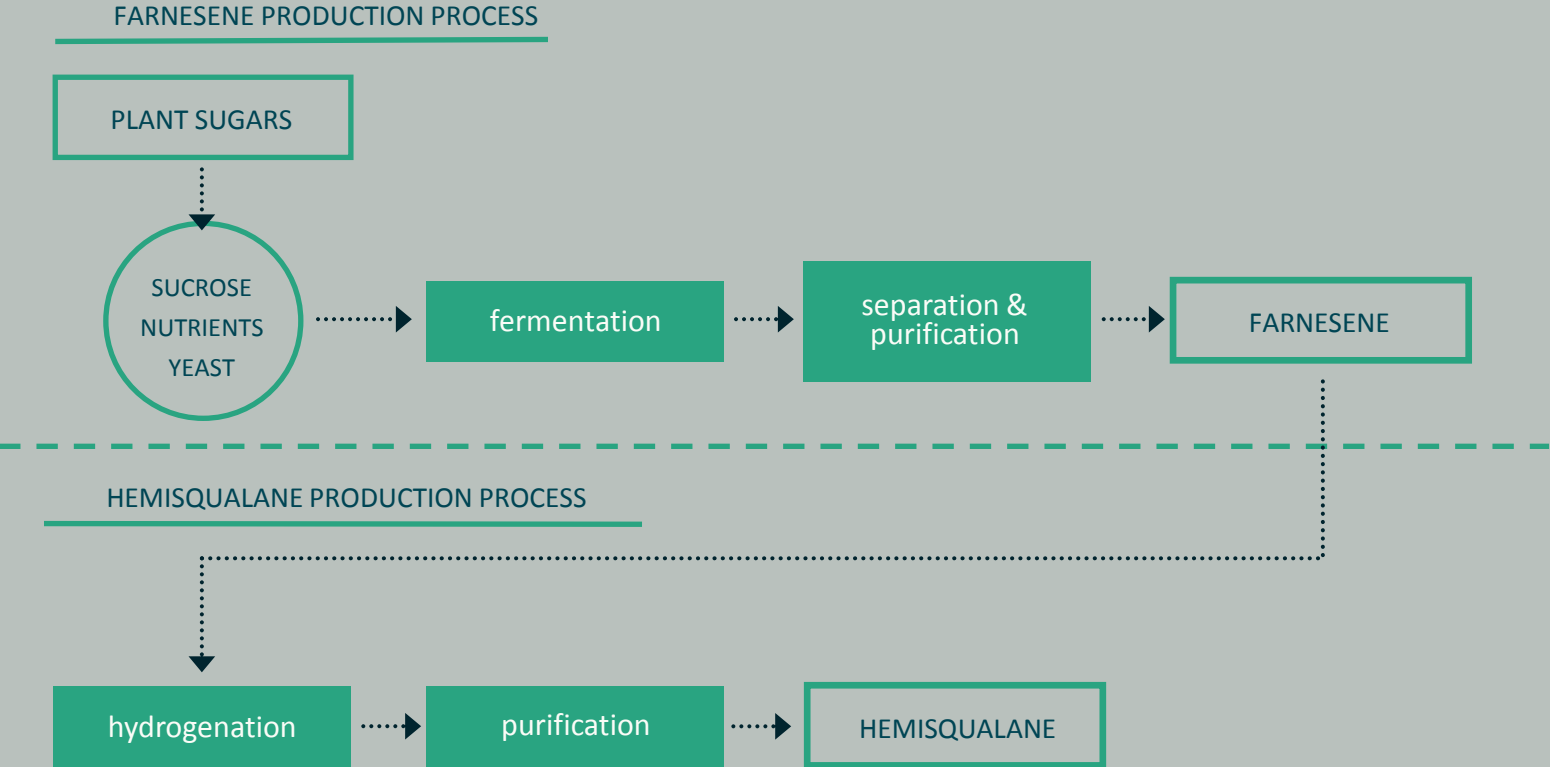
Properties	Minimum	Maximum
Purity*	95%	
Density @ 20°C*	0.761 g/mL	0.776 g/mL
Refractive Index @ 20°C*	1.425	1.435
Iodine Number*		0.5 g I <sub>2</sub> /100g
Acid Number*		0.1 mg KOH/g
Appearance and Color*	Colorless liquid	
Odor*	Nearly odorless	
Volatility	Non volatile	
Viscosity @ 20°C	~3 cP	

\* Product specification

# MANUFACTURING PROCESS

Amyris's Hemisqualane manufacturing process is very similar to the Neossance Squalane process. It begins with a yeast fermentation of plant sugars followed by hydrogenation and purification.

## NEOSSANCE HEMISQUALANE MANUFACTURING PROCESS



**Part 5:**

**A PEACE OF MIND INGREDIENT**

Trade Name		NEOSSANCE® Hemisqualane	NEOSSANCE® Squalane
NEOSSANCE PROMISE / PEACE OF MIND INGREDIENT			Derived from plant-sugar Renewable source Stable supply and price Consistent composition
INCI Name		C13-15 Alkane	Squalane
TYPICAL PROPERTIES			
	Appearance & color	Colorless liquid	Colorless liquid
	Odor	Nearly odorless	Nearly odorless
	Polarity	Non polar	Non polar
	Spreadability	High	Medium
	RI @ 20°C	1.425-1.435	1.449-1.453
	Density @ 20°C	0.761-0.776	0.806-0.811
	Viscosity @ 20°C	3cps	35cps
	Flash Point (°C)	110°C	218°C
TEXTURE/ SENSORIAL PROFILE		<ul style="list-style-type: none"> <li>• Has a good slip and short playtime</li> <li>• Light and dry feel</li> <li>• Non greasy and non tacky finish</li> <li>• Soft and silky after-feel</li> <li>• Leaves the hair soft and smooth, not weighing down</li> <li>• Facilitates smooth and even application</li> <li>• Creates luxurious and light textures</li> </ul>	<ul style="list-style-type: none"> <li>• Silky, smooth and luxurious touch</li> <li>• Non greasy, non heavy after-feel</li> <li>• Softens and soothes</li> <li>• Spreads easily and is rapidly absorbed into the epidermis</li> <li>• Persistent softening effect</li> <li>• Creates elegant textures</li> </ul>
PROVEN PERFORMANCE			
	SKIN CARE	<ul style="list-style-type: none"> <li>• High spreadability</li> <li>• Excellent cleansing properties</li> <li>• Solubilizes UV filters</li> <li>• Non-comedogenic</li> </ul>	<ul style="list-style-type: none"> <li>• Improves cell turnover</li> <li>• Provides moisture</li> <li>• Improves skin elasticity</li> <li>• Reduces wrinkles and fine lines</li> <li>• Enhances skin barrier integrity</li> <li>• Non-comedogenic</li> </ul>
	HAIR CARE	<ul style="list-style-type: none"> <li>• Low friction coefficient</li> <li>• Leaves hair silky and smooth</li> <li>• Provides color protection</li> <li>• Delivers heat protection and prevents damage</li> <li>• Reduces frizz effect</li> <li>• Provides easier combing</li> </ul>	<ul style="list-style-type: none"> <li>• Prevents moisture loss and nourishes</li> <li>• Provides heat protection and strengthens the hair</li> <li>• Penetrates the hair shaft</li> <li>• Improves shine</li> <li>• Enhances elasticity &amp; prevents breakage</li> </ul>
APPLICATIONS		Skin, Hair, Sun and Body Care, Makeup, Makeup removers, Cleansers, Antiperspirants, Deodorants	Skin, Hair, Sun and Body Care, Baby Care, Makeup, Cleansers

# NEOSSANCE HEMISQUALANE

## A PEACE OF MIND INGREDIENT

### VALUE PROPOSITION

#### FOR FORMULATORS

Highly pure

Unique sensorial feel, silky and light

Highly versatile product

High spreadability

Proven performances for hair care and cleansing applications

Derived from plant-sugar

Green package

#### FOR PROCUREMENT

Reliable supply

Stable price

Feedstock available in large quantities

Large manufacturing capacity

#### FOR QUALITY AND MANUFACTURING

Batch to batch consistency

Robust composition

2 years shelf life

#### FOR REGULATORY & SAFETY

INCI: C13-15 Alkane

REACH registered up to 1000T

China listed 2014 IECIC

TSCA listed

Full document library available

Non-irritant

Non-sensitizing

Non-comedogenic

Inherently biodegradable





**NEOSSANCE<sup>®</sup>**  
Hemisqualane

WHAT ARE YOUR QUESTIONS



**Part 6:**

**APPENDIX**

# SENSORIAL EVALUATION FORMULATIONS

Ingredients	INCI Name	Cream #1 Hemisqualane	Cream#2 Cyclomethicone	Cream#3 Isohexadecane
Water	Water	Qsp 100	Qsp 100	Qsp 100
Neofect PO	Phenoxyethanol, Caprylyl Glycol	0.80	0.80	0.80
Sepigel 305	Polyacrylamide, C13- 14 Isoparaffin, Laureth-7	5.00	5.00	5.00
<b>Hemisqualane</b>	<b>C13-15 Alkane</b>	<b>10.00</b>		
DC 345	Cyclomethicone		10.00	
Isohexadecane	Isohexadecane			10.00
Lactic Acid (10% aq. Sol)	Water, acid lactic	Qsp pH=6.5	Qsp pH=6.5	Qsp pH=6.5

**Table 1** : Formulations used in the sensorial evaluation



# PROVEN PERFORMANCE - NON COMEDOGENICITY

When compared to untreated control site and positive control site,  
Neossance Hemisqualane is considered non-comedogenic

## CLINICAL STUDY:

- Panel of 6 volunteers
- Positive control: Acetulan
- Application of tested products thrice weekly under occlusive patch to the upper back during 4 weeks
- A series of follicular biopsies were performed at induction and following the final patch removal at each test site

Product tested	Ratio of Follicles / comedones		Comedone activity value		
	Pre-treatment	Post-treatment	*Pre-treatment	**Post-treatment	% Difference
Neossance Hemisqualane	13.03	12.36	0.0767	0.0809	5.48
Acetulan (Positive control site)	13.75	8.19	0.0727	0.1221	67.95
Untreated control site	11.89	11.47	0.0841	0.0872	3.69

$$* = \frac{\text{Post-treatment ratio of follicles/ comedones}}{\text{Pre-treatment ratio of follicles/ comedones}} - 1$$

$$** = \frac{\text{Post-treatment ratio of follicles/ comedones}}{\text{Pre-treatment ratio of follicles/ comedones}} - 1$$

A clinically significant increase in comedogenic scores was noted for the positive control test site, treated with Acetulan (67.95%)

# PROVEN PERFORMANCE – HAIR CARE

## **FRIZZ EFFECT:**

**Purpose of the study is to assess reduction in the frizz effect of hair tresses via digital images.**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), 2% of Dimethicone (TRT2) and Placebo (CTRL)

**Study:** Naturally wavy Caucasian Hair

Digital photographs were taken (Initial condition). Then the tresses were placed in an acrylic chamber containing water, during 24 hours at  $85 \pm 5\%$  relative humidity (R.H.) and  $22^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . Tresses were photographed after 24 hours of exposure in the high humidity environment (85% R.H., Final condition).

The original images were converted to a scale of grey with a software program. The Frizz were determined as the percentage area of black pixels relating to frizzy hair fibers (detached from the body of the tress), obtained from the digital image after binarization (conversion to black/white).

## **COLOR PROTECTION:**

**Purpose of the study is to assess the effect of continuous use of a conditioner containing Neossance Hemisqualane on color protection of dyed hair.**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), 2% Dimethicone (TRT2) and Placebo (CTRL)

**Study:** Double bleached Caucasian hair.

Tresses were dyed with the colorant mixture Nutrisse Red6.66 - Garnier®. Next the tresses were submitted to successive washes with the treatments.

Color readings of the tresses were obtained using Byk-Gardner Spectro-Guide Sphere Gloss spectrophotometer after 1, 5, 10, 15 and 20 applications of the products

## **DAMAGE REDUCTION:**

**Purpose of the study is to evaluate levels of damage to the surface of hair fibers submitted to treatment with Neossance Hemisqualane via Scanning Electron Microscopy (SEM).**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), 2% Hydrolized Keratin (TRT2) and Placebo (CTRL)

**Study:** Caucasian natural straight hair

First, fibers were taken from the 'virgin' tresses (VIRGIN). Then the tresses were submitted to a double bleaching process. After the damaging procedure, hair fibers were collected from the 'damaged' tresses (DAMAGED). Then the tresses were submitted to product application. After product application, the tresses were dried in a standardized environment.

From the hair fibers collected, 5-mm long segments were taken from the center area. 5 micrographs were randomly obtained using the ZEISS™ 940-A scanning electron microscope at 15KV.

# PROVEN PERFORMANCE – HAIR CARE

## **THERMAL PROTECTION**

**Purpose of the study is to assess the potential of Neossance Hemisqualane to protect the  $\alpha$ -keratin structure of thermally damaged hair via DSC (Differential Scanning Calorimetry) technique.**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), 2% Polyquaternium 55 (TRT2) and Placebo (CTRL)

**Study:** Natural Caucasian hair

Right after the treatment, the tresses were dried with hair dryer (Taiff Turbo 6000 Professional, 1700W) for 5 minutes at approximately 80°C. Next, each tress was submitted to a cycle of 10 strokes with the straightening iron (Arno Elite, 38W) at approximately 230°C. Each stroke was made starting from the hair roots to the tips for 10 seconds. After the thermal damage cycle, hair fibers were randomly collected for DSC analysis. The fibers are kept soaked in water throughout the test.

The equipment used was DSC NETSCH Phoenix 204 Cell. The negative peak observed ( $\Delta H_D$  - denaturation enthalpy) on the DSC curve comes from heat absorption corresponding to the endothermic process of keratin denaturation and other possible components.

## **WET/DRY COMBABILITY**

**Purpose of the study is to assess wet and dry combability of hair tresses treated with Neossance Hemisqualane.**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), 2% Polyquaternium 55 (TRT2) and Placebo (CTRL)

**Study:** Caucasian natural hair.

Treatment tresses were then submitted to one application of conditioner. The wet combability was measured (Wet – BASELINE). Then, the tresses were dried in a standardized environment during 24 hours. The dry combability was measured (Dry – BASELINE). After products application, wet combability (Wet – FINAL) was taken for each tress. Next the tresses were dried in a standardized environment. Then the combability was measured (Dry – FINAL).

The combability measures were obtained using the EMIC DL-500 test equipment. Before starting the procedure the tresses were manually massaged with a comb to remove knots.

## **ELASTICITY:**

**Purpose of the study was to assess the influence of Neossance Hemisqualane on mechanical resistance of the structure of hair**

**Samples:** Conditioner with 2% Neossance Hemisqualane (TRT1), Hydrolyzed Keratin (TRT2) and Placebo (CTRL)

**Study:** Caucasian bleached hair

Hair fibers were collected for break test. Each strand was held by a lower claw and an upper claw connected to the load cell of a dynamometer on the upper part. Elongation at break was measured by EMIC instrument, model DL500 equipped with a dynamometer with a 20N load cell.



# EXAMPLE OF FORMULA

## NIGHT CREAM

<u>Item No.</u>	<u>Trade Name/Supplier</u>	<u>INCI Name</u>	<u>% by weight</u>
<b>Phase A</b>			
1	Abil WE-09 (Evonik)	Polyglyceryl-4 Isostearate, Cetyl PEG/PPG-10/1 Dimethicone, Hexyl Laurate	5.00%
2	Neossance Hemisqualane	C13-15 alkane	15.00%
3	Abil Wax 9801 (Evonik)	Cetyl Dimethicone	2.00%
<b>Phase B</b>			
4	Deionized water	Water (Aqua)	73.00%
5	Sodium Chloride (Univar)	Sodium Chloride	1.00%
6	1,3 Butylene Glycol (Univar)	Butylene Glycol	3.00%
7	Mikrokill COS (Arch)	Phenoxyethanol, Chlorphenesin, Caprylyl Glycol	1.00%
		<b>Total</b>	<b>100.00%</b>

### Product Specifications

**Color:** White

**Odor:** Characteristic

**Appearance:** Opaque lotion

**pH @ 25°C:** n/a

**Viscosity @ 25°C (RVT Spindle TE @ 10rpm):** 135 cps

# EXAMPLE OF FORMULA

## ANTI FRIZZ TREATMENT

<u>Item No.</u>	<u>Trade Name/Supplier</u>	<u>INCI Name</u>	<u>% by weight</u>
1	Neossance Hemisqualane	C13-15 alkane	40.00%
2	Dow Corning 1403 (Dow Corning)	Dimethicone, Dimethiconol	50.00%
3	Dow Corning 556 (Dow Corning)	Phenyl Trimethicone	5.00%
4	Crodamol STS (Croda)	PPG-3 Benzyl Ether Myristate	5.00%
		Total	100.00%

### Product Specifications

Color: Colorless

Odor: Characteristic

Appearance: Clear liquid

pH @ 25°C: n/a

Viscosity @ 25°C (RVT Spindle 6 @ 10 rpm): 200 cps

# EXAMPLE OF FORMULA - LIP GLOSS

Item No.	Trade Name/Supplier	INCI Name	% by weight
<b>Phase A</b>			
1	Neossance Hemisqualane	C13-15 alkane	18.00%
2	Versagel ME-750 (Calumet/Penreco)	Hydrogenated Polyisobutene, Butylene/Ethylene/Styrene Copolymer, Ethylene/Propylene/Styrene Copolymer	24.90%
3	Softisan 649 (Sasol)	Bis-Diglyceryl Polyacyladipate-2	16.00%
4	Crodamol PTIS (Croda)	Pentaerythrityl Tetraisostearate	12.00%
5	Indopol H-100 (Lipo)	Polybutene	15.00%
6	Super Sterol Ester (Croda)	C10-30 Cholesterol/Lanosterol Esters	5.00%
7	Orisil 200 (Orisil)	Amorphous Fumed Silica	1.00%
<b>Phase B</b>			
8	Ozokerite Wax SP-1020P (Strahl and Pitsch)	Ozokerite	3.00%
9	Candelilla Wax SP-75 (Strahl and Pitsch)	Euphorbia Cerifera (Candelilla) Wax	3.00%
10	Lexgard O (Inolex)	Caprylyl Glycol	0.50%
11	Bronidox 1160 (BASF)	Phenoxyethanol	0.50%
12	DL-Alpha Tocopheryl Acetate (DSM)	Tocopheryl Acetate	0.10%
13	Pomegranate Blackberry FL OS 103-31160 (Bell Flavors and Fragrances)	Flavor	0.50%
<b>Phase C</b>			
14	FAS55ERSI (KOBO)	Iron Oxides (CI77491), Cyclopentasiloxane, PEG/PPG 18/18 Dimethicone	0.50%
<b>Total</b>			<b>100.00%</b>

## Product Specifications

**Color: Berry Red (pantone 491M)**

**Odor/Flavor: Fruity**

**Appearance: Translucent paste**

**pH @ 25°C: n/a**

**Viscosity @ 25°C: n/a**