



greeningredients™

manufactured by SOCRI

SESAMULS® WO

## SUNSCREEN EFFICACY TESTS

SPF BOOSTER

WATER RESISTANCE ENHANCER

SUPERIOR PROTECTION

## SUNCARE APPLICATIONS

The protection provided by cosmetic products is neither permanent nor absolute.

One of the main factors capable of invalidating the level of protection offered by these products is contact with water. For this reason, manufacturers of sun products have developed formulations that are able to retain their water resistance on the skin even after immersion in water.

The principle on which water resistance testing is based is a comparison of a sunscreen product's SPF, calculated after a very specific predetermined length of time immersed in water (wet SPF) with the value determined using the traditional method (static SPF), calculated in compliance with the International Sun Protection Factor method.

The test calls for a well-defined sequence of immersions in water. A sunscreen product is labelled "water resistant" (WR) if the effectiveness of its SPF following 2 immersions in water, each 20 minutes in length, is greater than 50% of its

static, or initial, SPF. A product can be labelled "very water resistant" (VWR) if the verified effectiveness of the SPF after 4 immersions in water, each 20 minutes in length, is greater than 50% of its static SPF.

The in vitro sun protection factor is calculated by means of spectrophotometric measurements of the diffuse transmittance of a sample substrate, depending on wavelength within the ultraviolet spectrum.

Water resistance tests for WO emulsions made with **SESAMULS® WO** were conducted using a Labsphere UV-2000S UV Transmittance Analyzer spectrophotometer and PMMA slides. The quantity of product applied for the determination was 0.75 mg/cm<sup>2</sup>.

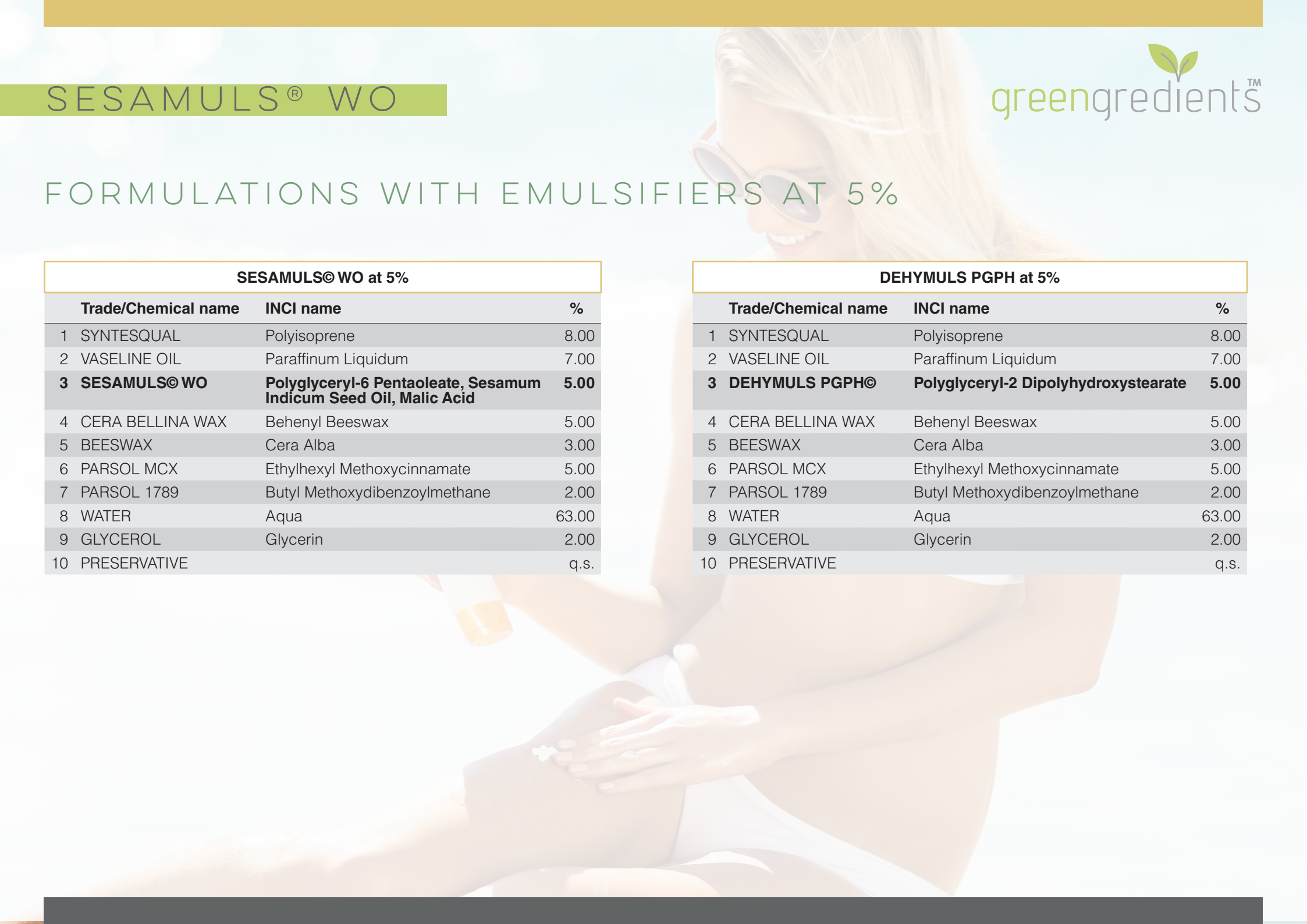
**DEHYMULS PGPH** (INCI = Polyglyceryl-2 Dipolyhydroxystearate), a WO emulsifier produced by BASF and considered a market "leader", was used as a baseline for comparison.



FORMULATIONS WITH EMULSIFIERS AT 5%

SESAMULS® WO at 5%		
Trade/Chemical name	INCI name	%
1 SYNTESQUAL	Polyisoprene	8.00
2 VASELINE OIL	Paraffinum Liquidum	7.00
<b>3 SESAMULS® WO</b>	<b>Polyglyceryl-6 Pentaoleate, Sesamum Indicum Seed Oil, Malic Acid</b>	<b>5.00</b>
4 CERA BELLINA WAX	Behenyl Beeswax	5.00
5 BEESWAX	Cera Alba	3.00
6 PARSOL MCX	Ethylhexyl Methoxycinnamate	5.00
7 PARSOL 1789	Butyl Methoxydibenzoylmethane	2.00
8 WATER	Aqua	63.00
9 GLYCEROL	Glycerin	2.00
10 PRESERVATIVE		q.s.

DEHYMULS PGPH at 5%		
Trade/Chemical name	INCI name	%
1 SYNTESQUAL	Polyisoprene	8.00
2 VASELINE OIL	Paraffinum Liquidum	7.00
<b>3 DEHYMULS PGPH®</b>	<b>Polyglyceryl-2 Dipolyhydroxystearate</b>	<b>5.00</b>
4 CERA BELLINA WAX	Behenyl Beeswax	5.00
5 BEESWAX	Cera Alba	3.00
6 PARSOL MCX	Ethylhexyl Methoxycinnamate	5.00
7 PARSOL 1789	Butyl Methoxydibenzoylmethane	2.00
8 WATER	Aqua	63.00
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10 PRESERVATIVE		q.s.



# SESAMULS® WO

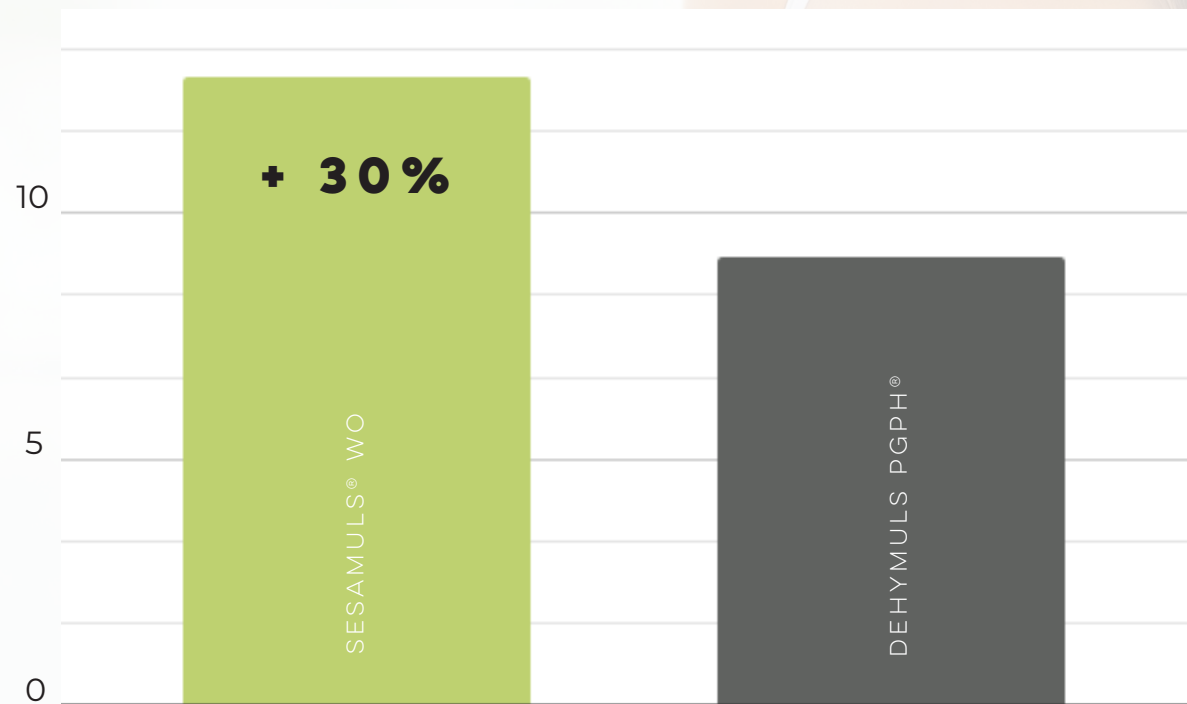
## EVALUATING SPF

SESAMULS® WO

<b>Initial SPF</b>
12.8

DEHYMULS PGPH®

<b>Initial SPF</b>
9.1



**SESAMULS® WO** disperses chemical filters more efficiently by distributing them homogeneously inside the emulsion. The sun protection is thus more effective than that of the competitor.

# SESAMULS® WO



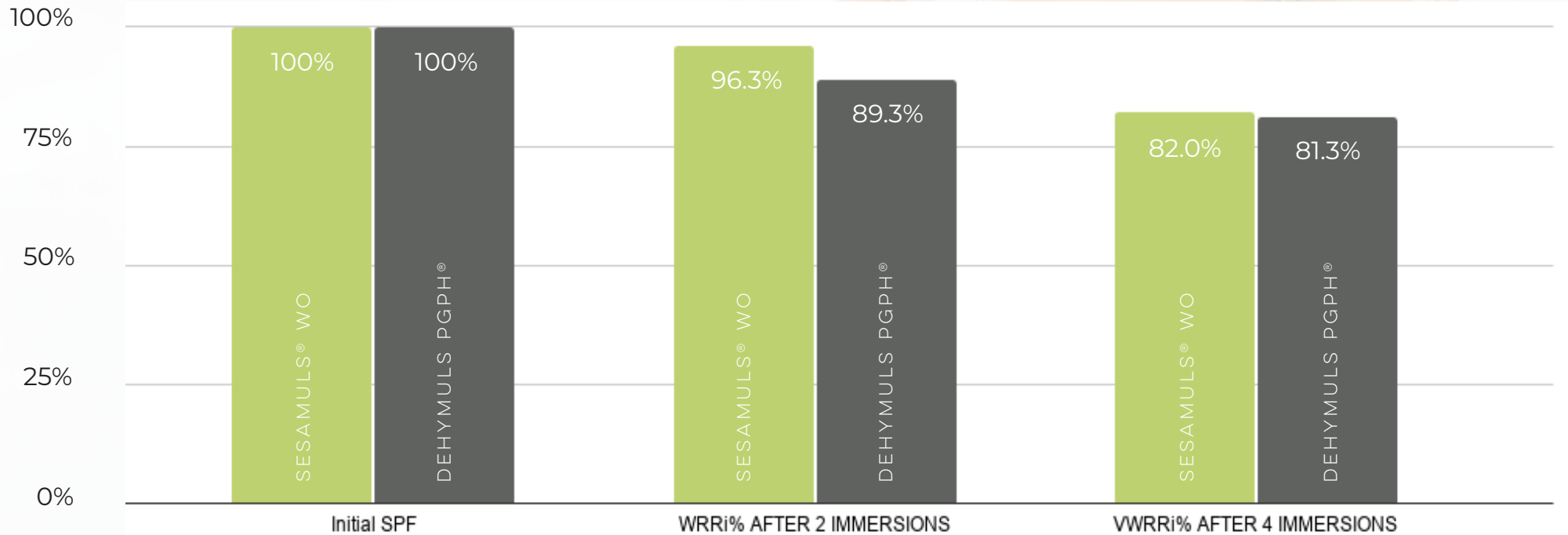
## WATER RESISTANCE

### SESAMULS® WO

Initial SPF	SPF WWR	SPF VWRRI	WRRi%	VWRRi%
12.8	12.4	10.7	96.3	82.0

### DEHYMULS PGPH®

Initial SPF	SPF WWR	SPF VWRRI	WRRi%	VWRRi%
9.1	8.3	7.6	89.3	81.3



## FORMULATIONS WITH SESAMULS® WO AT 3%

**SESAMULS® WO at 3.0 % - EMULSION A**

Trade/Chemical name	INCI name	%
1 SYNTESQUAL	Polyisoprene	4.00
2 FINSOLV TN	C12-15 Alkyl Benzoate	3.00
<b>3 SESAMULS® WO</b>	<b>Polyglyceryl-6 Pentaoleate, Sesamum Indicum Seed Oil, Malic Acid</b>	<b>3.00</b>
4 RITACHOL	Lanolin Alcohol	2.00
5 CROPURE MEADOW FOAM	Meadowfoam Seed Oil	1.00
6 BEESWAX	Cera Alba	1.50
7 PARSOL MCX	Ethylhexyl Methoxycinnamate	5.00
8 UVINUL A	Benzophenone-3	2.00
9 ESCALOL 597	Octocrylene	2.00
10 WATER	Aqua	74.50
11 GLYCEROL	Glycerin	2.00
12 PRESERVATIVE		q.s.

**SESAMULS® WO at 3.0 % - EMULSION B**

Trade/Chemical name	INCI name	%
1 SYNTESQUAL	Polyisoprene	3.50
2 FINSOLV TN	C12-15 Alkyl Benzoate	2.00
<b>3 SESAMULS® WO</b>	<b>Polyglyceryl-6 Pentaoleate, Sesamum Indicum Seed Oil, Malic Acid</b>	<b>3.00</b>
4 RITACHOL	Lanolin Alcohol	2.00
5 CROPURE MEADOW FOAM	Meadowfoam Seed Oil	1.00
6 BEESWAX	Cera Alba	1.50
7 PARSOL MCX	Ethylhexyl Methoxycinnamate	5.00
8 UVINUL A	Benzophenone-3	2.00
9 ESCALOL 597	Octocrylene	2.00
10 WATER	Aqua	76.00
11 GLYCEROL	Glycerin	2.00
12 PRESERVATIVE		q.s.



# SESAMULS® WO



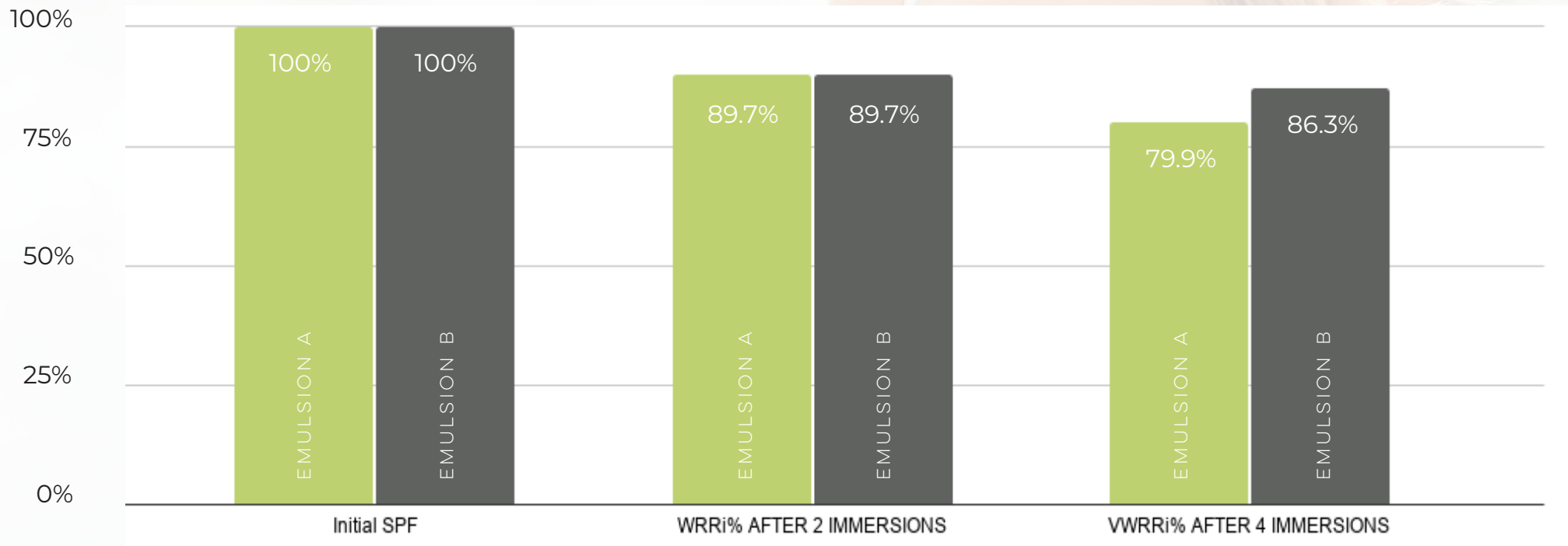
## WATER RESISTANCE

### SESAMULS® WO - EMULSION A

Initial SPF	SPF WWR	SPF VWRRi	WRRi%	VWRRi%
10.6	9.6	8.7	89.7	79.9

### SESAMULS® WO - EMULSION B

Initial SPF	SPF WWR	SPF VWRRi	WRRi%	VWRRi%
10.6	9.6	9.5	89.7	86.3



By reducing the % of oily phase (more suitable to chemical filters as fat-soluble substances) and increasing the aqueous phase, the emulsion obtained is lighter, smoother and easier to distribute evenly on the skin, guaranteeing more homogeneity and therefore efficacy.

## SUPERIOR PROTECTION

**SESAMULS® WO** has been shown to be a highly versatile emulsifier. It is capable of forming stable WO emulsions with a glossy appearance, which are barely oily to the touch and pleasant to apply.

The product appears in a clear, oily, amber-coloured liquid with hardly any odour. Its physical form means it can be used in cold processing, as well.

In the formulations created for these tests, **SESAMULS® WO** proved to be effective in creating stable emulsions at a percentage as low as 3%, including an external phase composed of chemical filters and oils of different polarities.

The emulsions tested proved to have excellent water resistance, higher than that of the same emulsions produced using emulsifiers that are “leaders” in the market. The surface film created by **SESAMULS® WO** is water resistant but light, barely perceptible. It maintains a pleasant level of skin moisturization and leaves the skin feeling soft and smooth.

The market’s interest in water-in-oil formulations is growing, thanks to the clear dermatological benefits this system offers.

**SESAMULS® WO** effectively meets this need allowing formulators to create water in oil emulsions that show unusual lightness, spreadability, freshness, reduced oiliness and a lack of stickiness, typical of emulsions where the external phase is water.



# SESAMULS® WO

greengredients™



## INCI NAME

POLYGLYCERYL-6 PENTAOLEATE, SESAMUM INDICUM (SESAME) SEED OIL, MALIC ACID

## TECHNICAL DATA

Appearance at 20°C	Viscous Oily liquid
Colour	Amber
Odour	Characteristic
Dry residue, %	97 - 99
pH at 20°C 5% in water	6.0 - 8.0
Acid number	7 max. (mg KOH/g)
Saponification number	165 ÷ 185 (mg KOH/g)
HLB	6 (Experimental)
Heavy Metals	Max. 10 ppm
Total Bacteria	Max. 100 CFU/g
Total Molds	Max. 100 CFU/g





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