



SOLVAY

asking more from chemistry®

Miracare® SLB

High Performance Surfactant System
for Enhanced Sensorial Cleansing

Beauty & Care



Fragrance



Skin Care



Hair Care



Miracare[®] SLB

Structured Surfactant Liquid System

Miracare[®] SLB products are innovative surfactant blends that form liquid crystal structures in cleansing formulations. These Structured Surfactant Liquid systems have a unique rheology profile that provides aesthetically pleasing textures and enables the suspension of insoluble oils and particles.

Miracare[®] SLB allows formulators to develop cleansing products that deliver breakthrough performance in combination with an exceptional in-use experience:

- ▶ Rich foam
- ▶ Unique texture
- ▶ Long-lasting moisturization
- ▶ Excellent hair & skin conditioning
- ▶ Enhanced scent experience



Miracare[®] SLB is ideal for use in formulating

INCI: Water, Sodium Trideceth Sulfate,
Sodium Lauroamphoacetate, Cocamide MEA
▶ Body washes ▶ Liquid hand soaps ▶ Shampoos



Unique texture and formulation flexibility

▶ **Miracare SLB: a unique structuration enabling to:**

- Stabilize high levels of conditioning oils
- Incorporate high levels of fragrance and essential oils
- Suspend high density particles such as mica, pigments, zinc pyrithione, selenium sulfide
- Incorporate high molecular weight polymers

▶ **Miracare SLB: delivering formulation flexibility**

- Cold processable concentrate
- Texture ranging from a lotion-like fluid to a high viscosity cream
- Dense and rich foam, even in the presence of oil
- Compatibility and enhanced performance with cationic ingredients (surfactants, polymers...)

Miracare® SLB - Enhanced Fragrance Experience

Today's consumers require more than cleansing from their personal care products. Fragrance plays an integral role in driving purchases due to consumer needs for products that rejuvenate, protect and scent, both skin and hair. The overall objective is to leave the consumer feeling revitalized and invigorated, generally improving their well-being.



Consumer claims & formulation benefits

- ▶ High fragrance level stabilization
- ▶ Superior fragrance deposition
- ▶ Intensify fragrance release
- ▶ Improve fragrance fidelity
- ▶ Provide long-lasting scent
- ▶ Efficient fragrance use

Fragrances play an important role in driving purchases. Consumers often state a pleasant scent is vitally important when purchasing body wash and shampoo. **Miracare® SLB provides fragrance enhancement and delivery benefits, adding strong sensory cues to your products.**

Intensify Fragrance Release on Skin and Hair with Miracare® SLB

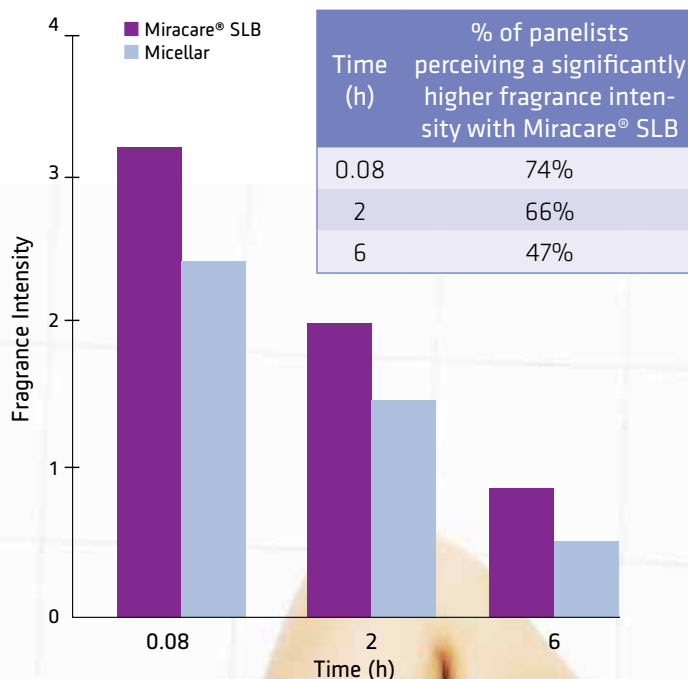
▶ Enhanced Fragrance Intensity on Skin

Fragrance can be difficult to stabilize in rinse-off formulations and are not deposited substantially on skin or hair.

Miracare® SLB significantly enhances fragrance intensity and substantivity, giving long lasting fragrance release after rinsing, compared to conventional formulations.

Miracare® SLB Body Wash		Micellar Body Wash	
Miracare® SLB 365	35%	SLES	14%
Fragrance (added before structuring)	3%	CAPB	2%
Jaguar® C17	0.35%	Jaguar® C17	0.35%
		Fragrance (post-added)	3%

Test on an internal untrained blind panel (15 persons), body wash applied on forearm by the same operator, olfactory evaluation of fragrance intensity by each panelist after 5 min, 2 h and 6 h. (Units: 0: no scent, 1: very low scent, 2: moderate scent, 3: intense scent, 4: very intense scent)



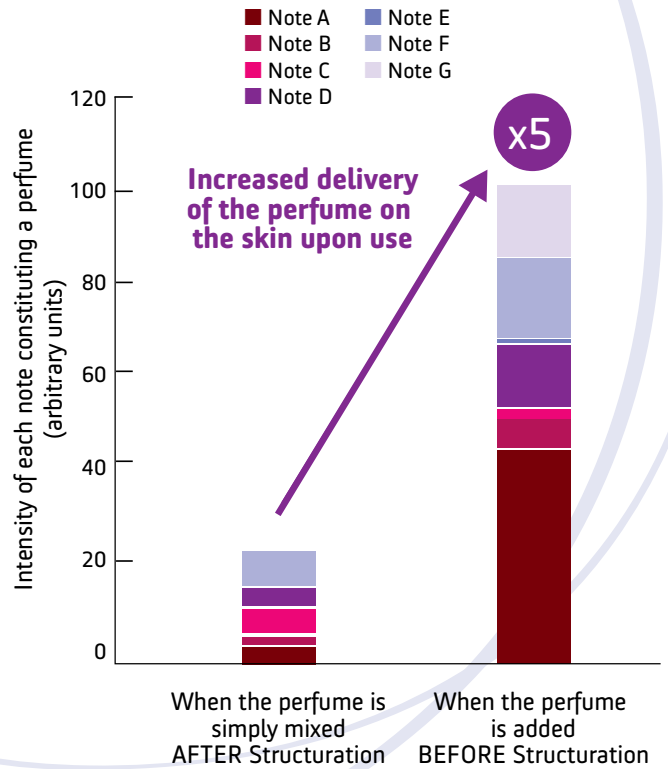
Formulations containing **Miracare® SLB** must be structured to provide stabilization and delivery performance. To deliver the most fragrance to skin and hair, the fragrance should be introduced before structuring.

Adding the fragrance in the oil phase before structuring significantly improves the substantivity of the fragrance and can increase fragrance intensity by at least 30%.

Miracare® SLB Body Wash	
Miracare® SLB 365	35%
Rice Bran Oil	12%
Jaguar® C17	0.35%
Fragrance	3%

Analysis of the fragrance components remaining on skin by gas chromatography after 6h when introducing fragrance either before or after structuring.

Measurements carried out by Takasago on 4 expert panelists, body wash applied on forearm, molecules on skin captured through a twister.

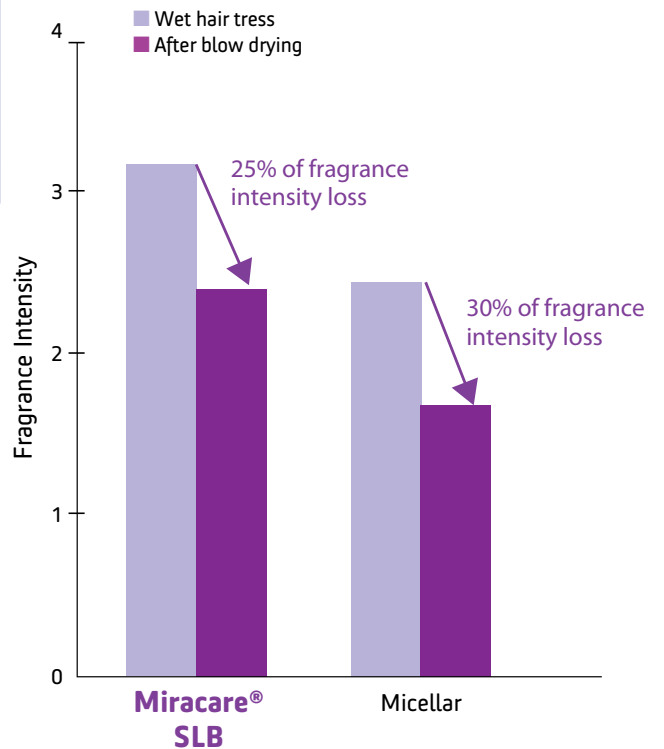


Enhanced Fragrance Intensity on Hair

Fragrance intensity on hair, after shampoo is also superior when using **Miracare® SLB** shampoo instead of conventional surfactant systems. The difference remains significantly perceivable even after drying hair.

Miracare® SLB shampoo		Micellar Shampoo	
Miracare® SLB 365	35%	Base SLES/CAPB/NaCl	14/2/0.8
Fragrance (added before structuring)	2%	Fragrance	2%
Jaguar® C17	0.35%	Jaguar® C17	0.35%
No oil		No oil	

Blind panel test, 10 persons; the intensity of fragrance was evaluated by each person on a wet hair tress, after drying, and then after 4h. (Units: 0: no scent, 1: very low scent, 2: moderate scent, 3: intense scent, 4: very intense scent) Hair drying conditions: 65°C, maximum air speed, 7 minutes.



Enhanced Fragrance Experience

Cleansers are Closer to the Original Fragrance Scent with Miracare® SLB

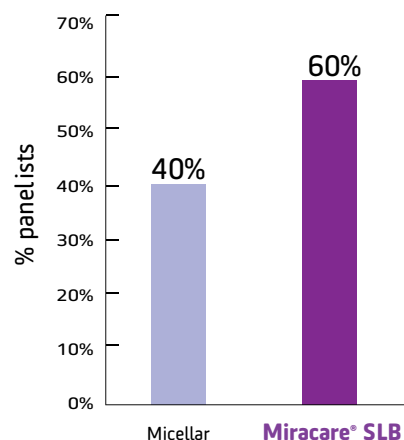
It is always a challenge for formulators to stabilize the smell of a fragrance in a cleansing formulation: fragrance tends to change and get degraded over time, which forces manufacturers to use tailor-made perfumes for their surfactant chassis.

Miracare® SLB Cleanser	
Miracare® SLB 365	35%
Fragrance (added before structuring)	2%
Jaguar® C17	0.35%
No oil	

Micellar Cleanser	
Base SLES/CAPB/NaCl	14/2/0.8
Fragrance	2%
Jaguar® C17	0.35%
No oil	

Blind panel test, 13 persons, fragrance was evaluated by each person by smelling the formulation in the bottle and comparing to the reference (pure fragrance on wool)

Among 64% panelists perceiving an olfactory difference between both formulations, 60% found Miracare® SLB product closer to the pure fragrance.



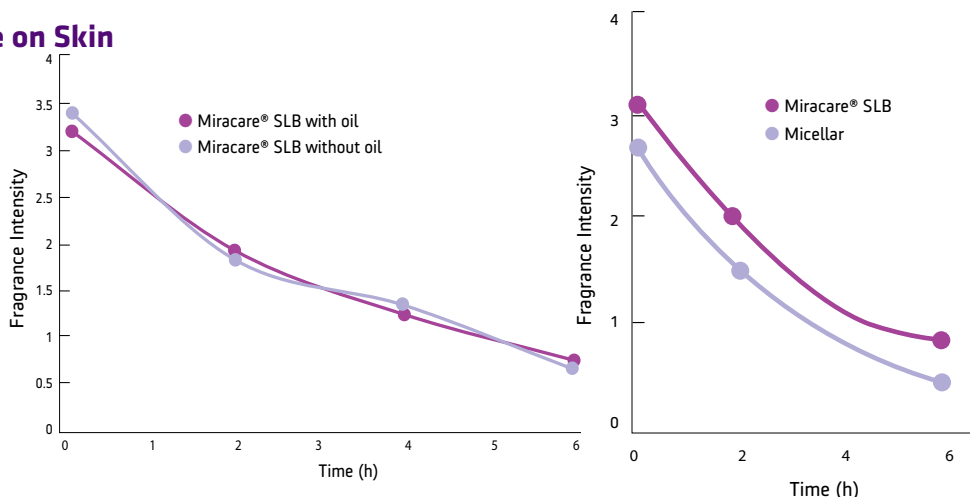
Provide Long Lasting Scent on Skin and Hair with Miracare® SLB

Miracare® SLB allows to substantiate moisturizing claims through the use of high levels of oil without compromising on the end fragrance properties.

Improved Persistence of Fragrance on Skin

Miracare® SLB Body Wash	
Miracare® SLB 365	35%
Jaguar® C17	0.35%
Fragrance (added before structuring)	3%
NaCl	3.5%
No oil or 12% oil	

Internal panel test (15 persons), body wash applied on forearm by the same operator, olfactory evaluation of fragrance intensity by each panelist after 5 min, 2 h, and 6 h.



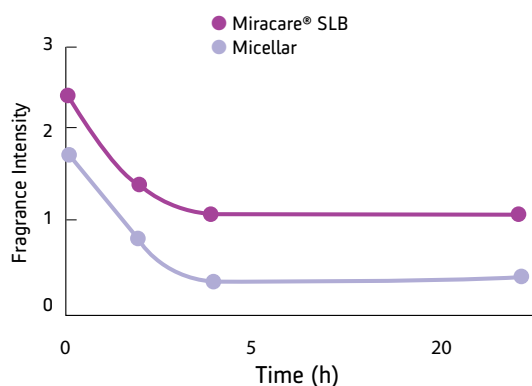
Improved Persistence of Fragrance on Hair

Miracare® SLB Shampoo	
Miracare® SLB 365	35%
Fragrance (added before structuring)	2%
Jaguar® C17	0.35%
No oil	

Micellar Shampoo	
Base SLES/CAPB/NaCl	14/2/0.8
Fragrance	2%
Jaguar® C17	0.35%
No oil	

Blind panel test, 10 persons; the intensity of fragrance was evaluated by each person on a wet hair tress, after drying, and then after 2h and 24h.

(Units: 0: no scent, 1: very low scent, 2: moderate scent, 3: intense scent, 4: very intense scent) Hair drying conditions: 65°C, maximum air speed, 7 minutes.



Miracare® SLB shampoos increase the fragrance intensity perceived on hair through enhanced deposition:

- ▶ 81% of the panelists perceived a difference in favor of the Miracare® SLB shampoo on wet hair just after shampoo
- ▶ On dried hair and after 24h 77% of the panelists still perceive a higher intensity in favor of the Miracare® SLB shampoo



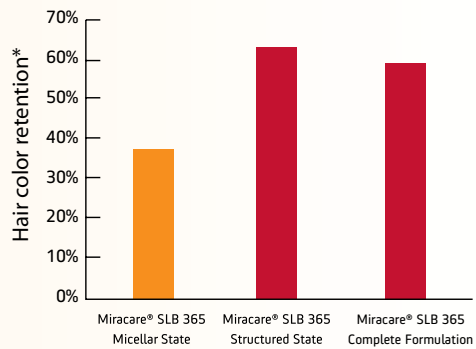
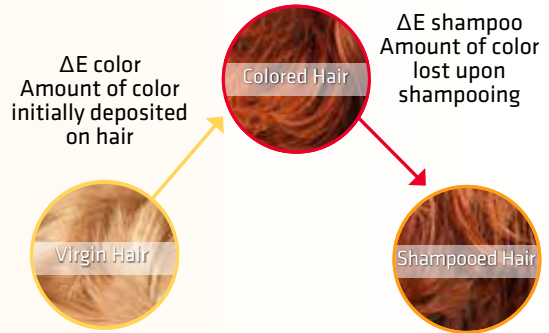
Protect & Revive Hair Color.

The protection of artificial hair color is a growing need among consumers. Any hair dye, even a so-called “permanent” color, is vulnerable to washout. Water is by far the largest cause of fading occurring from shampooing but smart formulation can help limit the degradation. Perceived by consumers as resulting in dull yellowish hair, color fade, and more particularly red fade, can be quantified instrumentally through color changes, ΔE or Δa .

Reduced Fading with Structured Shampoo.

Strong cleansing agents (such as sulfates) in micellar shampoos measurably aggravate color fading.

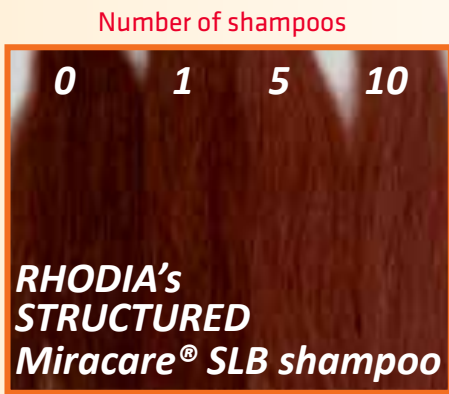
Color fade of hair dyed with an auburn coloration kit, was measured after shampooing 3 times with micellar and structured shampoos. While the micellar state only allows 40% retention of the original color, a structured shampoo made with **Miracare® SLB** retains more than 60%, therefore improving color protection by 50% compared to a micellar state. The effect is readily visible to the consumer.



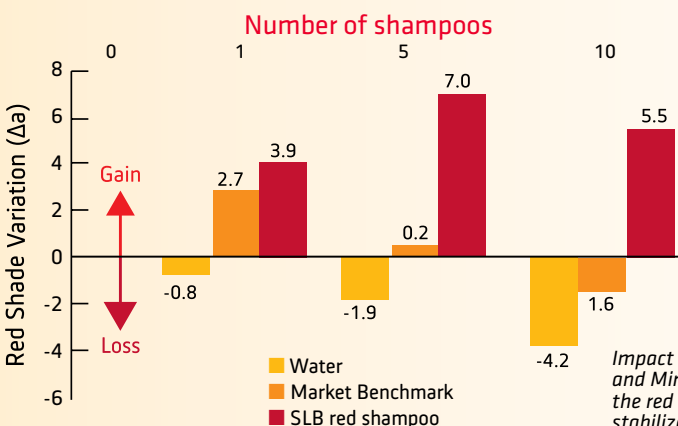
*100% - ΔE shampoo / ΔE color

Stop Trying to Reduce Fade. Restore Color!

Shampoos made with **Miracare® SLB** allow the dispersion and stabilization of pigments. Shampoos made with **Miracare® SLB** are able to deliver pigments into the hair so that the red shade continuously increases with additional shampoo uses. The effect is perceivable by consumers, even after only 5 shampoos, as stronger and more vivid color.



Comparison of a color protection micellar market benchmark vs Miracare® SLB shampoo containing red pigments.



Impact of the market benchmark and Miracare® SLB shampoo on the red shade with red pigments stabilized and efficiently delivered.



Miracare® SLB - Rejuvenate Hair

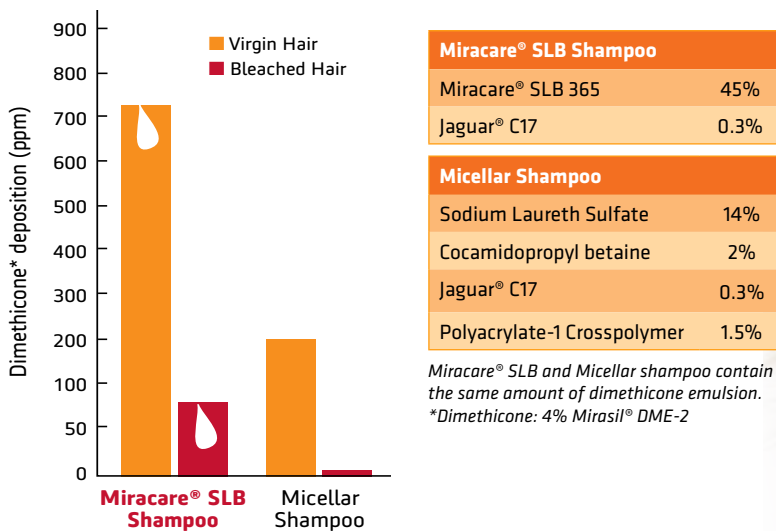
More than just cleansing, consumers want their hair to look better. This is increasingly difficult as dried out, damaged hair is more common with the number of hair treatments used today.

Miracare® SLB enables the formulation of high performance products designed to deliver a range of solutions for color fade reduction, anti-dandruff and even hair coloring.

Deliver More Active Ingredients with Miracare® SLB

Miracare® SLB shampoos provide higher deposition of silicone oil on both virgin and damaged hair compared to the benchmark.

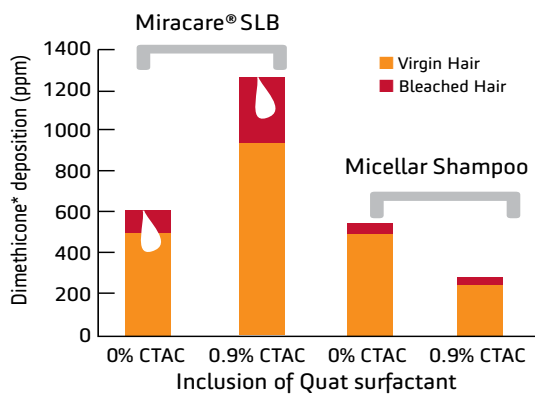
Deposition of dimethicone oil on virgin and bleached hair



Deposit More Oil Where It's Needed

Miracare® SLB allows formulators to design shampoos with enhanced deposition of active ingredients where hair needs it most: damaged and bleached zones. The amount of oil deposition on damaged vs virgin hair can be enhanced via the addition of cationic surfactant.

Selectivity in deposition of actives



Miracare® SLB Shampoo	
Miracare® SLB 365	45%
Jaguar® C17	0.35%

*3% Dimethicone 0.6 µm

Consumer claims & formulation benefits

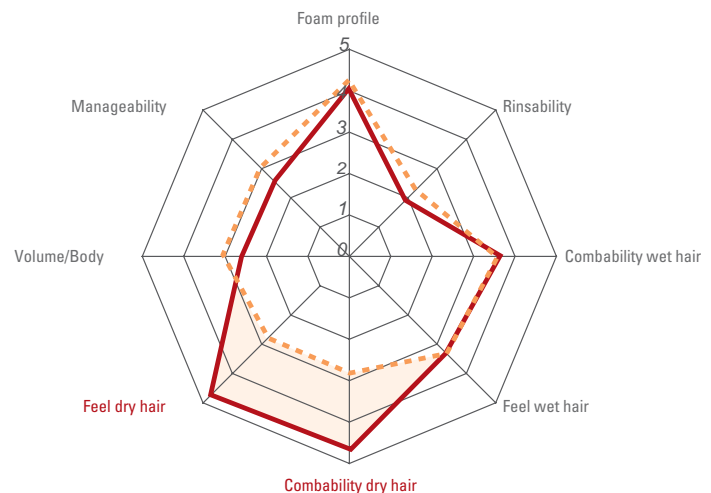
- Hair Repair**
 Selectively deposit oils where it is needed most: on damaged hair
- Hair Moisturization**
 Increase manageability of damaged hair
- Natural-based Conditioning**
 Achieve best-in-class performance through the delivery of all types of oils
- Hair and Scalp Care**
 Combine natural oils and Zinc Pyrithione or Selenium Sulfide for alluring hair and a flake-free scalp
- Hair Color Protection**
 Prevent color fade by using gentle surfactants



Achieve Salon Performance with Miracare® SLB and Natural Oil Shampoo

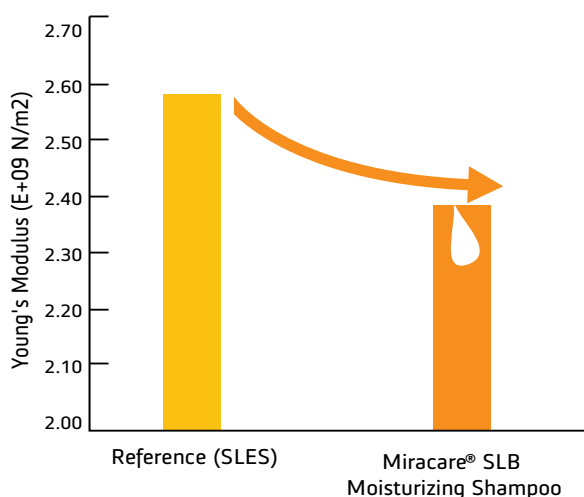
Dry hair is significantly better conditioned with **Miracare® SLB** than with a leading international brand.

- Miracare® SLB Natural Oil Shampoo
- Leading International Brand



► Soften and Tame Unmanageable Hair with Oil Therapy

- A unique moisturizing complex featuring natural oil, guar and wheat protein is stabilized and delivered with **Miracare® SLB**.
- Young's Modulus measures stiffness.
- Lower Young's modulus shows that hair fibers are softer and more manageable.
- After the first application of **Miracare® SLB** Moisturizing Shampoo, hair is significantly more moisturized and manageable.



The elastic deformation part of the elongation test curve provides insights on the level of moisturized feel of the hair fiber.

Tensile test was carried out at Martech Labs (USA) on double bleached hair.

► Deliver Soothing Anti-Dandruff Performance

- An innovative combination of Zinc Pyrithione and Meadow foam Oil leaves hair flake-free and moisturized.
- A panel of 14 people used a Soothing Anti-Dandruff Shampoo made from **Miracare® SLB** and observed visible reduction of dandruff after 12 days. This matches the performance of a leading international reference.

Location	Reduction in visible flakes	
	Miracare® SLB Soothing Anti-Dandruff Shampoo	Leading International Brand
Scalp	-40%	-40%
Drape (Shoulders)	-10%	-10%

Dandruff study was carried out at CRL Institute (USA).

Both shampoos contained identical active levels Zinc Pyrithione; results are expressed as mean of % change from baseline.

Miracare® SLB Formulations

Hair Repair Shampoo		
Water		qs 100%
Miracare® SLB 365		45%
Mirasil® DME-2	(Water, Dimethicone, Laureth-8, Succinoglycan)	4%
Jaguar® C17	(Guar Hydroxypropyltrimonium Chloride)	0.35%
Cetrimonium Chloride		2%
Sodium Chloride		2%
Mackstat® GCM	(Glyceryl Caprylate, Methylisothiazolinone)	qs
Citric Acid		pH= 5.0 – 5.5

Moisturizing Shampoo		
Water		qs 100%
Miracare® SLB 365		45%
Sunflower Oil		4%
Jaguar® C17	(Guar Hydroxypropyltrimonium Chloride)	0.35%
Miracare® CT-100	(Stearyl Alcohol, Cetrimonium Bromide)	2.7%
Sodium Chloride		2%
Mackpro® Plus Wheat-C	(Phenoxyethanol, Benzoic Acid, Dehydroacetic Acid)	0.1%
D-Panthenol		0.1%
Phenagon® PBD	(Phenoxyethanol, Benzoic Acid, Dehydroacetic Acid)	qs
Citric Acid		pH= 5.0 – 5.5

Formulation tested at the Schrader Institute against a leading brand.

Natural Oil Shampoo (Silicone-free)		
Water		qs 100%
Miracare® SLB 365		45%
Sunflower Oil		3%
Jaguar® C17	(Guar Hydroxypropyltrimonium Chloride)	0.35%
BHT		0.05%
Sodium Chloride		3%
Mackstat® GCP	(Phenethyl Alcohol, Glyceryl Caprylate)	qs
Citric Acid		pH= 5.0 – 5.5

Formulation tested at the Schrader Institute against a leading brand.

Soothing Anti-Dandruff Shampoo		
Water		qs 100%
Miracare® SLB 365		40%
Meadowfoam Oil		3%
Jaguar® C17	(Guar Hydroxypropyltrimonium Chloride)	0.4%
Zinc Pyrithione		1%
Sodium Chloride		3%
BHT		0.05%
Phenagon® PBD	(Phenoxyethanol, Benzoic Acid, Dehydroacetic Acid)	qs
Citric Acid		pH= 5.0 – 5.5

Formulation tested at CRL against a leading brand.

Miracare® SLB - Nourish the Skin

Today's consumers require more than cleansing from their personal care products. In addition to fragrance that can play an important role in driving purchase, the trend toward health and well-being has created a need for products that rejuvenate, hydrate, protect and scent skin and leave the consumer feeling revitalized and invigorated.



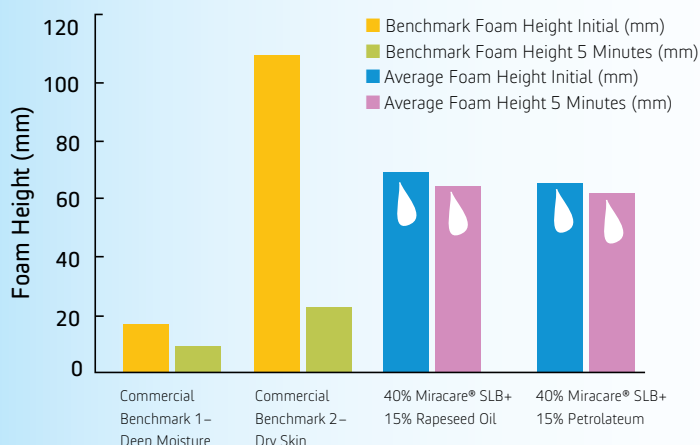
Miracare® SLB allows for formulating skin cleansing products that meet the needs and perceptions of today's consumers.

Consumer claims & formulation benefits

- ▶ **Long-lasting Moisturization**
Deliver 24-hour skin hydration
- ▶ **Align Product Texture with consumer benefit**
Tune formulation rheology, from liquid to lotion
- ▶ **Rich Foam in presence of Oil**
Create creamy, long-lasting foam, even with high oil formulations
- ▶ **Towards Innovative Claims**
Stabilize active ingredients in body washes such as caffeine, vitamins, tanning agents and UV filters

▶ Generate Rich Foam in Presence of Oil

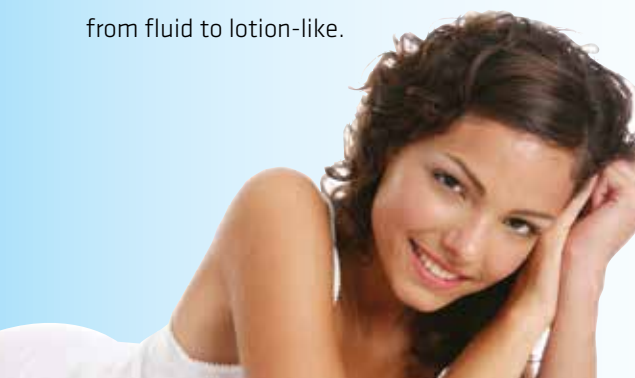
Solvay's **Miracare® SLB** allows incorporation and delivery of high levels of moisturizing oils, without sacrificing foam quality or quantity.



Ross-Miles: ASTM D1173 - 53 (Reapproved 1992);
A Guide to Surfactants World, X. Domingo, 1995.

▶ Design Tailored Textures

Formulation texture can be tuned, from fluid to lotion-like.

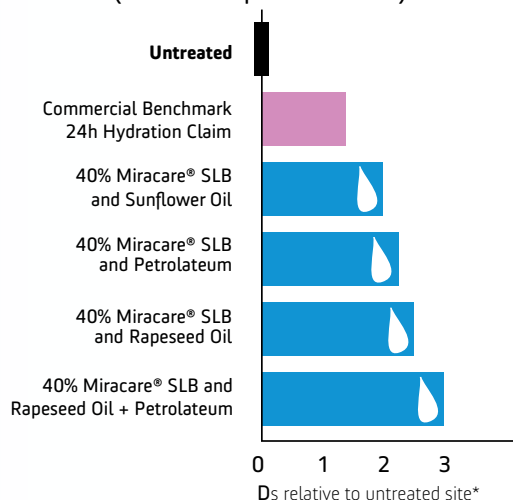


Viscosity (mPa.s) at 10 rpm	
0.0	0.0
0.0 -	5,000.0
5,000.0 -	10,000.0
10,000.0 -	20,000.0
20,000.0 -	30,000.0
>	30,000.0

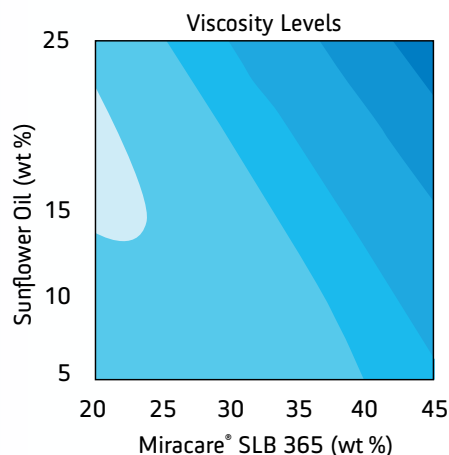
▶ Provide Long-Lasting Moisturization

Compared to the commercial benchmark, formulations with Solvay's **Miracare® SLB** deliver enhanced 24-hour moisturization.

Skin Hydration Measured by Corneometry (24 Hours After Treatment)



*Ds denotes the change of the dielectric constant of treated skin relative to untreated skin. The dielectric constant is a measure of the water content of skin.





Towards Innovative Claims

With robust formulation stability and efficient delivery of actives,

Miracare® SLB allows the use of actives such as self-tanning, caffeine, vitamins and exfoliating particles to deliver innovative claims.



Self-tanning Body Wash

Ingredients	Composition % by wt
Miracare® SLB 365/N	40
Sunflower Oil	15
BHT	0.05
Jaguar® C17	0.35
Erythrulose	5
20% salt solution	17.5
Sodium benzoate	0.5
Water	qs 100%
Citric Acid	pH 4.5-5.0

Exfoliating Body Wash

Ingredients	Composition % by wt
Miracare® SLB 365/N	47.5
Jaguar® C17	0.5
Glycerine	1
Macadamia nut oil	10
BHT	0.05
Fragrance	0.2
NH ₄ Cl	3.5
Kathon® CG	0.3
Citric Acid (50%)	1.6
Apricot seed granules	2.5
Exfoliating tamaru powder	2
Natural bead J20	2.5
EDTA versen 100	0,1
Water	qs 100%

Sun Protection Body Wash

Ingredients	Composition % by wt
Miracare® SLB 365/N	45
Aquea SPF phase ASB	35
Rapeseed oil	10
BHT	0.05
Jaguar® C17	0.4
Fragrance	0.2
NH ₄ Cl	3.5
Kathon® CG	0.3
Citric Acid (50%)	1.5
Water	qs 100%

Firming Body Wash

Ingredients	Composition % by wt
Miracare® SLB 365/N	45
Guarana (caffeine)	0.1
Orange (vitamine C)	0.05
Dandelion extract	0.05
Avocado oil	4
Olive oil	4
Prunus oil	2
BHT	0.05
Jaguar® C17	0.4
Jaguar® S	0.2
Fragrance	0.2
NH ₄ Cl	3.5
Kathon® CG	0,3
Citric Acid (50%)	1.9
Water	qs 100%



Solvay S.A.

Rue de Ransbeek, 310
1120 Bruxelles
Belgique
T: +32 2 264 2111
F: +32 2 264 3061

North America

Solvay Novecare
8 Cedar Brook Drive
Cranbury, NJ 08512 – USA
Tel: +1-800-973-7873
F: +1-609-860-0463
NovcareCC@solvay.com

Europe

Solvay Novecare
40, rue de la Haie-Coq – F-93306
Aubervilliers Cedex – France
Tel: +33 (0) 1 53 56 50 00
F: +33 (0) 1 53 56 53 90

Asia Pacific

Solvay Asia Pacific Pte. Ltd.
438B Alexandra Road
#02-09/12 Alexandra Technopark – Singapore 119968
Tel: +65 - 6291 1921
F: +65 - 6394 3377

Latin America

Solvay Novecare
Centro Empresarial
Avenida Maria Coelho Aguiar, 215, Bloco B-1º Andar
Cep: 05804-902 – São Paulo-SP Brazil
Tel: +55 11 3747-7637
F: +55 11 3741-8378

www.solvay.com

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