oleon
a natural chemistry

HEALTH & BEAUTY

www.oleonhealthandbeauty.com

HAIR CARE

Discover Oleon's range of conditioning agents, vegetable oils and emulsifiers.

ELEVATE YOUR HAIR CARE ROUTINE WITH OUR SPECIALTY INGREDIENTS

Hair care is essential for more than just our appearance; it also plays a crucial role in overall hygiene and well-being. Healthy hair not only enhances our look but also contributes to a strong, vibrant and disease-free scalp. Even if some people may have a genetic predisposition to hair that suffers from breakage, scalp issues, and dandruff, our specialized ingredients make it easy to have shiny, voluminous, and vibrant hair.

To begin, let's explore the diverse types of hair and textures, and find out how our specialized ingredients can help you create products that truly elevate hair care. Hair varies significantly from person to person due to factors such as ethnicity, genetics, age and diet. While straight hair is one of the most common types across the world, each person has a unique texture. This opens up opportunities for creating more customized products.

Hair textures generally fall into four categories: straight (type 1), wavy (type 2), curly (type 3) and tightly curled (type 4) hair. Each of these types can be further classified into subtypes A, B and C, based on hair curl pattern, density, porosity, width, and length (See Figure 1).

This brochure provides an overview of Oleon's hair care ingredients, suitable in formulations for strong and healthy hair. Our diverse Jolee® and Radia® esters, and Lucee® oils are featured in a range of products from conditioners, detangling products, lotions and tonics to treatments and serums. They will enrich your formulations with unique sensations.

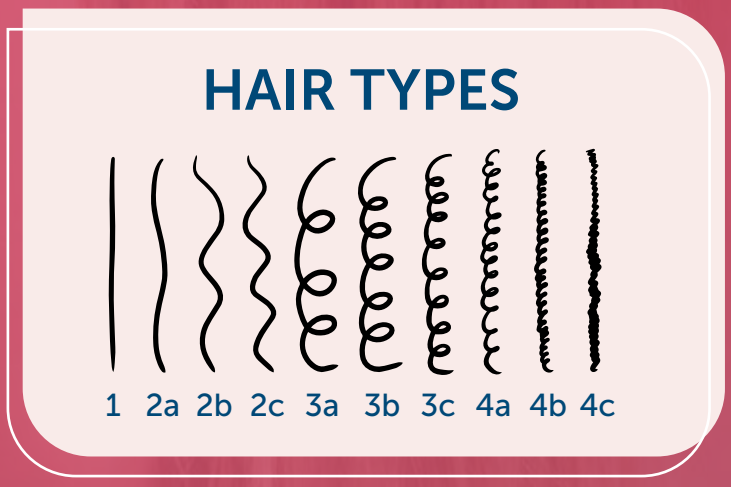


Figure 1: *Hair Types: Exploring Hair Textures and Their Characteristics (medicinenet.com)*

NAVIGATE THROUGH OUR INGREDIENTS FOR HAIR CARE

FILM-FORMING EMOLLIENTS

Film-forming emollients are used in hair care to create a layer over the hair that smooths the cuticles, wich makes the hair softer. Furthermore, these ingredients will reduce friction and provide a protective barrier against moisture loss. Our range of film-formers consists of isostearic acid esters that have a higher dynamic viscosity, making them ideal for forming a protective film that contributes to healthier and more manageable hair.

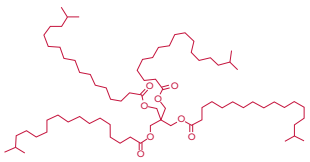
Product features

Jolee 7181

INCI
Pentaerythrityl Tetraisostearate

CAS
62125-22-8

SUSTAINABILITY
Readily biodegradable
Natural Origin Index (ISO 16128) = 0.9



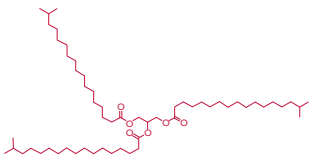
FEATURES
Rich emollient
Improves heat resistance
Helps with hair detangling

RADIA® 7373

INCI
Triisostearin

CAS
26942-95-0

SUSTAINABILITY
Natural Origin Index (ISO 16128) = 1



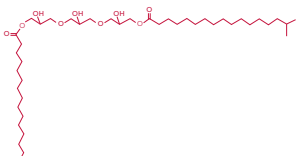
FEATURES
Rich emollient
Reduces hair friction
Anti-frizz properties

RADIA® 7245

INCI
Polyglyceryl-3 Diisostearate

CAS
90431-25-7

SUSTAINABILITY
Natural Origin Index (ISO 16128) = 1



FEATURES
Water-in-oil (W/O) emulsifier
Improves heat resistance
Anti-frizz properties

Physicochemical properties

	Jolee 7181	RADIA 7373	RADIA 7245
Dynamic viscosity (25°C) [mPa.s]	295	145	4205 (65°C)
Refractive index (20°C)	1.470	1.466	1.471
Surface tension (25°C)	28.8	28.3	30.2*

**Measured at 1% into water (20°C)*

Table 1: Comparison of the physicochemical properties between Jolee 7181 (Pentaerythrityl Tetraisostearate), Radia 7373 (Triisostearin) and Radia 7245 (Polyglyceryl-3 Diisostearate).

Compatibility with oils and solvents

	Jolee 7181	RADIA 7373	RADIA 7245
Sunflower oil	<= 75%	<= 75%	Soluble
Mineral oil	<= 75%	<= 75%	Soluble
Isopropyl Myristate	<= 75%	<= 75%	Soluble
Dimethicone	Insoluble	Insoluble	Insoluble
Caprylic/Capric Triglyceride	<= 75%	<= 75%	Soluble

Table 2: Compatibility of Jolee 7181 (Pentaerithrityl Tetraisostearate), Radia 7373 (Triisostearin) and Radia 7245 (Polyglyceryl-3 Diisostearate) with various oils and solvents. Solubility was determined when the mixture remained uniform and clear after mixing at 55-60°C and 24h at room temperature.

Application data

In vitro tests were conducted on three conditioner formulations, each containing 4% of Oleon's film-forming emollients, in comparison with a negative reference, and commercially available references on the market. Properties tested during analysis include hair detangling or wet combing, hair friction, heat resistance and anti-frizz.

Each conditioner is tested on three hair strands of dark brown Type 3a Brazilian hair to ensure reproducibility of the results. Additionally, before applying the conditioner, all hair tresses are pre-washed with SLES at a concentration of 10% and dried at room temperature.

Hair detangling

Hair detangling is a key feature for hair care formulations in order to improve combing through dry and wet hair. The detangling efficacy of Oleon's film-forming esters is examined using the following procedure. After preparation of the hair strands, the conditioner is applied and rinsed off. A wet combing analysis is then performed with a Dia-stron instrument, measuring the energy which is required to comb through the wet hair. The lower the energy measured, the better the hair can be combed, and thus the better the detangling properties of the conditioner.

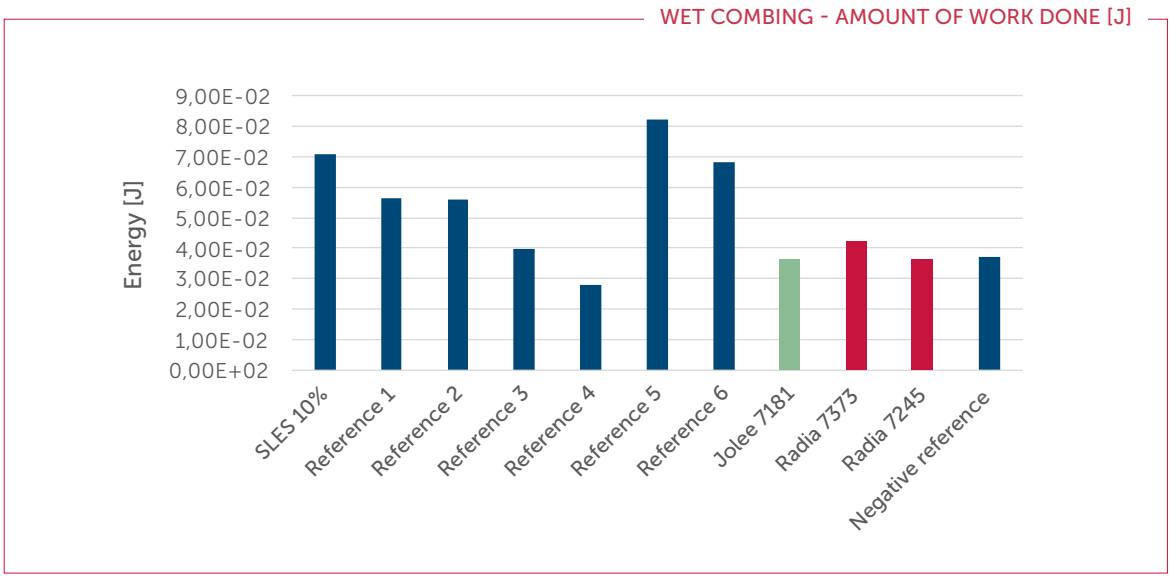


Figure 2: Amount of energy [J] needed to comb through wet, dark brown Type 3a Brazilian hair treated with different conditioners containing 4% of Oleon's film-forming emollients, in comparison with conditioners available on the market.

Conclusion: **Oleon's conditioners** work **very well** compared to the references on the market. They improve the **wet combing** of the hair tresses, and thus **help with detangling** of the hairs in conditioners.

Hair friction

Hair friction can be used as a measure to determine hair softness. The softness of the hair originates from the appearance of hair cuticles; smooth and healthy cuticles allow hair to slide easily over neighbouring hairs, while raised cuticles will roughen the hair. Therefore, damaged hair tends to have more raised cuticles, which contributes to hair wear and tear. Conditioners will help to smooth the hair cuticles, which will create more slip between the hairs, resulting in softer hair.

To verify hair softness, friction measurements have been performed on hair strands treated with the different conditioners, rinsed off and dried at room temperature. Friction is measured in amount of work or energy [J] using a Dia-stron instrument. The lower the results, the less friction and the smoother the hair cuticles, which leads to softer and smoother hair.

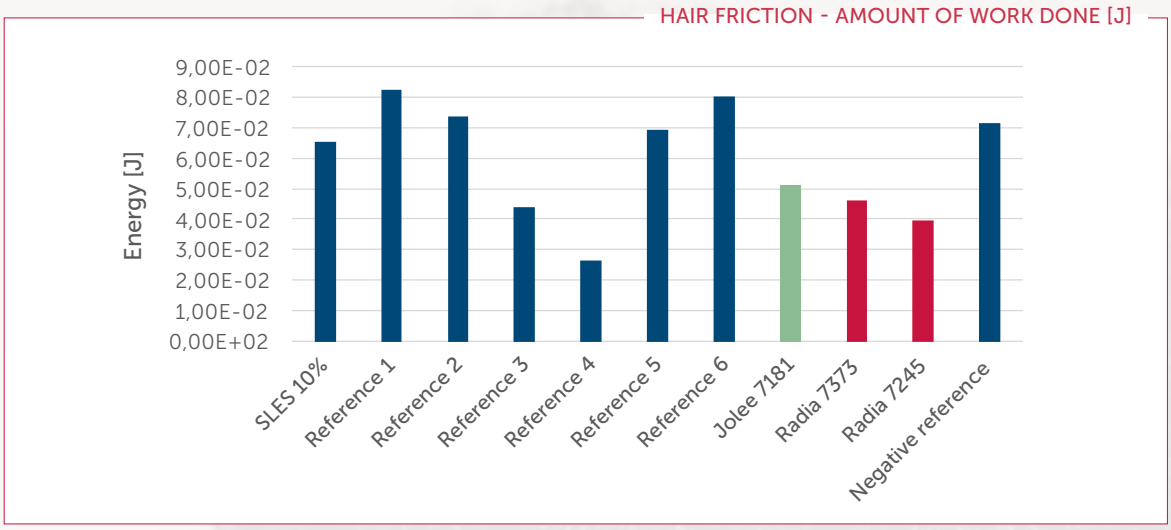


Figure 3: Amount of friction, measured in energy [J], of tresses of dark brown Type 3a Brazilian hair treated with different conditioners containing 4% of Oleon's film-forming emollients, in comparison with conditioners available on the market.

Conclusion: **Oleon's film-forming emollients** work very well to **close the hair cuticles** and to make **hair softer** compared to the negative reference. Therefore, these ingredients contribute greatly to the softness of the hair. Compared to conditioners in the market, Oleon's conditioners are also **very effective**.

Heat resistance properties

Oleon's film-forming emollients are also tested to verify if they can bring heat protective properties to formulations. Analyses are performed on the same conditioners with 4% of Oleon's film-forming emollients as described before, compared to the references on the market which claim to have heat protective properties. In this case, it is only reference 1.

The procedure to measure the heat resistance begins after preparing the hair strands, applying the conditioners, rinsing them off and letting them dry at room temperature. Once dry, heat is applied by using a hair straightener set to 235°C. After straightening, hair friction is measured, using the same procedure as before.

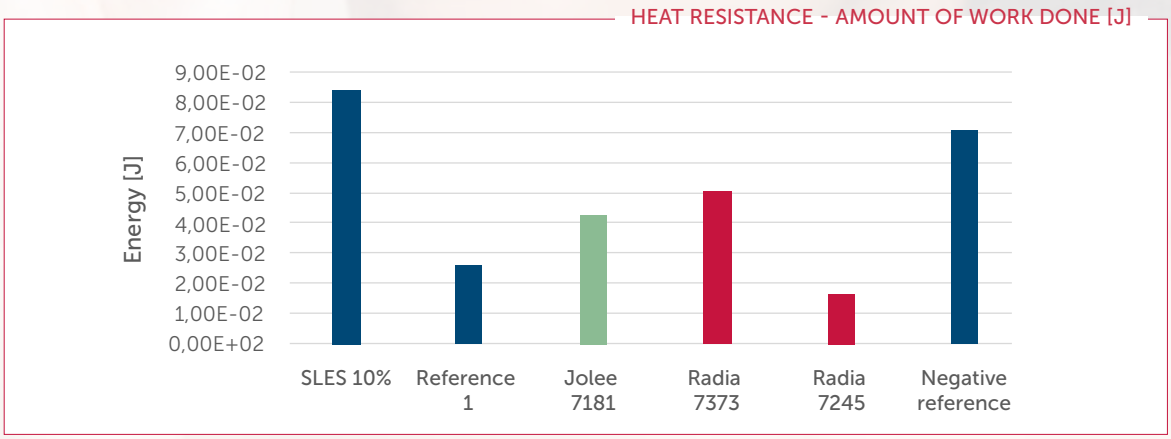


Figure 4: Heat resistance properties of a conditioner containing 4% of Oleon's film-forming emollients in comparison with a commercially available conditioner. Results are obtained by measuring the hair friction, measured in energy [J], of tresses of dark brown Type 3a Brazilian hair treated with a straightener at 235°C.

Conclusion: **Radia 7245** works very well and **outperforms the benchmark**.
All Oleon's film-forming emollients bring **heat resistance properties** in comparison with the negative reference.

Anti-frizz properties

Frizzy hair occurs when the hair cuticles are damaged or raised. This allows moisture to penetrate the hair shaft, causing it to swell and become frizzy. Frizzy hair can be managed by using ingredients with anti-frizz properties.

The evaluation of the anti-frizz effect of the different conditioners on the hair, is obtained by analyzing the projected area of hair strands that are placed into a humidity box before and after applying the conditioners. This area is correlated to hair volume. The higher the difference in projected area, the higher the volume decrease and the better the anti-frizz properties. In this test only references that claim to offer anti-frizz properties are used, which are reference 2 and 3.

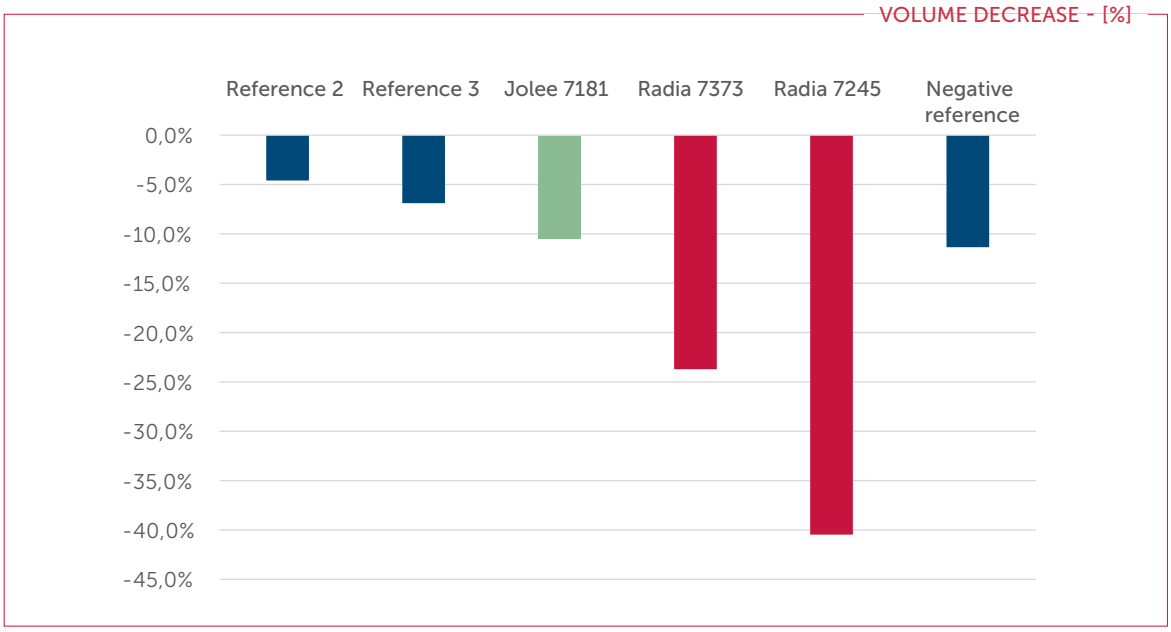


Figure 5: Anti-frizz properties of conditioners containing 4% of Oleon's film-forming emollients in comparison with commercially available conditioners. Results are obtained by analyzing the projected area of dark brown Type 3a Brazilian hair placed into a humidity chamber, before and after using the conditioner.

Conclusion: **Radia 7245** and **Radia 7373** are ideal ingredients for **anti-frizz formulations**. They **outperform** the **benchmarks** and the negative reference.

SILICONE-LIKE EMOLLIENTS

Silicones are often used in hair care for their conditioning, detangling and/or anti-static properties. With Jolee 7750 and Jolee 7202, Oleon offers green alternatives to frequently used light silicones like Cyclopentasiloxane and Dimethicone (5 cSt). Radia 7798 on the other hand can be used as a natural alternative for highly viscous silicones. Its higher viscosity of 3000 mPa.s also provides structuring properties to your formulations.

Product features

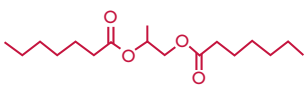
Jolee 7202

INCI
Propylene Glycol Diheptanoate

CAS
56519-68-7

SUSTAINABILITY
Readily biodegradable
Natural Origin Index (ISO 16128) = 1

FEATURES
Light silicone alternative
Velvety and powdery afterfeel



Jolee 7750

INCI
Isoamyl Laurate

CAS
6309-54-9

SUSTAINABILITY
Readily biodegradable
Natural Origin Index (ISO 16128) = 1

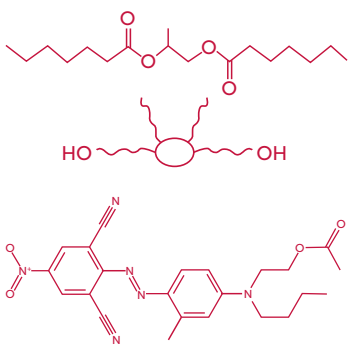
FEATURES
Light silicone alternative
Light and silky touch

RADIA® 7798

INCI
Propylene Glycol Diheptanoate, Hydrogenated Dilinoleyl Alcohol (and) Ethylcellulose

SUSTAINABILITY
Natural Origin Index (ISO 16128) > 0.9

FEATURES
Viscous silicone alternative
Soft skinfeel



Physicochemical properties

	CYCLOPENTASILOXANE (D5)	DIMETHICONE 5 CST	DIMETHICONE 1000 CST	Jolee 7202	Jolee 7750	RADIA 7798
Viscosity (25°C) [mm^2/s]	Ca. 4	Ca. 5	Ca. 1000	Ca. 6.5	Ca. 5.5	Ca. 3500
Refractive index (20°C)	1.396	1.398	1.405	1.436	1.436	1.475
Surface tension (25°C) [mN/m]	18.1	19.1	21.12	23.1	29.0	30.6

Table 3: Comparison of the physicochemical properties of Jolee 7202 (Propylene Glycol Diheptanoate), Jolee 7750 (Isoamyl Laurate) and Radia 7798 (Propylene Glycol Diheptanoate, Hydrogenated Dilinoleyl Alcohol (and) Ethylcellulose) with the benchmarks Cyclopentasiloxane (D5), Dimethicone 5 cSt and Dimethicone 1000 cSt.

Compatibility with oils and solvents

	Jolee 7202	Jolee 7750	RADIA 7798
Sunflower oil	<= 75%	<= 75%	<= 25%
Propylene Glycol	Insoluble	Insoluble	Insoluble
Isopropyl Myristate	<= 75%	<= 75%	<= 50%
Dimethicone	Insoluble	Insoluble	Insoluble
Isoamyl Laurate	<= 75%	/	<= 50%
Caprylic/Capric Triglyceride	<= 75%	<= 75%	<= 50%

Table 4: Compatibility of Jolee 7202 (Propylene Glycol Diheptanoate), Jolee 7750 (Isoamyl Laurate) and Radia 7798 (Propylene Glycol Diheptanoate, Hydrogenated Dilinoleyl Alcohol (and) Ethylcellulose) with various oils and solvents. Solubility was determined when the mixture remained uniform and clear after mixing at 55-60°C and 24h at room temperature.

Application data

Hair detangling

In vitro tests were conducted on three leave-in hair oil formulations containing either Oleon's light silicone-like emollients (Jolee 7202 and Jolee 7750) or cyclopentasiloxane (D5) to study the detangling efficacy. This efficacy was determined by measuring the combing force needed to comb dark brown, straight Caucasian hair tresses treated with hair oil compared to tresses treated with water. Hair oil formulations contained 70% of the test product.

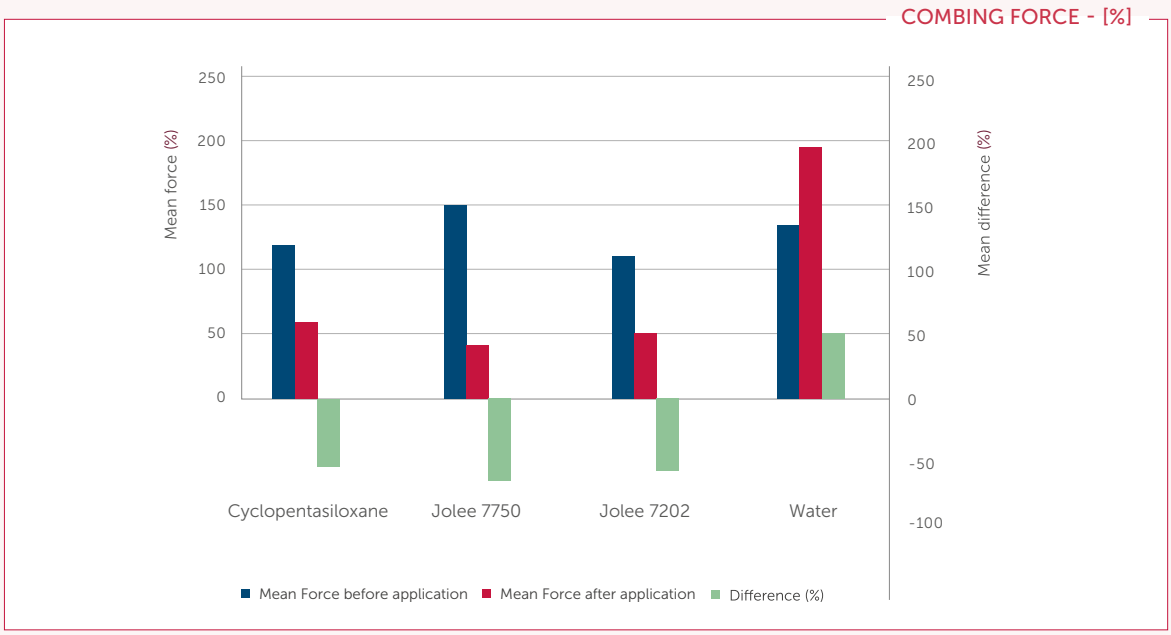


Figure 6: Combing force needed to detangle hair tresses at T0 (before application of hair oil) and T1 (after application of hair oil). Measurements were performed on dark brown, straight Caucasian hair with a TA.XT plus Texturometer from Stable Micro Systems. In red the decrease/increase of combing force is shown as a percentage of the initial combing force. *The values obtained at T0 differ due to the fact that no hair tress is equal to another and combing differences might be observed in each tress.*

Conclusion: **Jolee 7202** and **Jolee 7750** show a significant **decrease in combing force** needed to detangle the hair tresses compared to untreated hair. They also have a **similar efficacy** as **Cyclopentasiloxane**.

SUBLIME CURL UNIFY ELIXIR

	INGREDIENT	INCI	SUPPLIER	% W/W
PHASE A	**Radia 7798**	Propylene Glycol Diheptanoate (and) Hydrogenated Dilinoleyl Alcohol (and) Ethylcellulose	Oleon	43
	Isododecane	Isododecane	-	39.3
	DPG	Dipropylene Glycol	-	8
	Jolee 7202	Propylene Glycol Diheptanoate	Oleon	5
	Jolee 7750	Isoamyl Laurate	Oleon	3
	Perfume	Parfum (Fragrance)	Givaudan	1
	DL-α-Tocopherol acetate	Tocopheryl Acetate	Sigma	0.7

Manufacturing procedure

1. Weigh all ingredients one by one and mix them without heating until obtaining a homogeneous elixir. Isododecane must be handled under a hood.

Naturality profile according to ISO16128 NOI = 1 NOI > 0.5 NOI ≤ 0.5

VEGETABLE OILS

Vegetable oils have become highly popular in hair care routines due to their natural and nourishing properties. Derived from various plants, these oils are rich in essential fatty acids, vitamins, and antioxidants, making them ideal for promoting healthy hair and scalp. Vegetable oils have multiple benefits in hair care such as moisturizing, nourishment, scalp health, and repair and growth. This brochure highlights the benefits of three key vegetable oils: jojoba, avocado and almond oil.

Jojoba oil

This oil closely mimics the scalp's natural sebum, making it effective for balancing oil production. It moisturizes the hair without leaving a greasy residue, helping to **maintain a healthy scalp and manage oil levels**.

Avocado oil

It penetrates the hair shaft, providing deep hydration to the hair cuticles.
Avocado oil **prevents dryness** and helps maintaining the hair's **natural moisture balance, reducing frizz** and making it **more manageable**.

Almond oil

An excellent natural moisturizer. Its emollient properties lock in moisture, making it especially beneficial for **dry and brittle hair.** It imparts a natural shine, giving the hair a healthy, glossy appearance. Additionally, almond oil smooths the hair cuticle, reduces frizz and **improves the overall texture of the hair**.

Product features

lucee

Oil Jojoba

INCI
Simmondsia Chinensis Seed Oil

CAS
61789-91-1

Oil Avocado RD KH

INCI
Persea Gratissima Oil

CAS
8024-32-6

Oil Almond RBD K

INCI
Prunus Amygdalus Dulcis Oil

CAS
8007-69-0

Fatty acid composition

Free fatty acid	Lucee Oil Jojoba	Lucee Oil Avocado RD KH	Lucee Oil Almond RBD K
C16:0		✓	
C18:1	✓	✓	✓
C18:2		✓	✓
C20:1	✓		
C22:1	✓		

Table 5: Main free fatty acid composition of jojoba, avocado and almond oil.

NUTRI-SHINE CONDITIONER

	INGREDIENT	INCI	SUPPLIER	% W/W
PHASE A	Water	Aqua	/	Up to 100
	Glycerine 4811	Glycerin	Oleon	3
	Acacia Gum	Acacia Senegal Gum	Alland & Robert	0.5
PHASE B	**Lucee Btr Sheanut RBD**	Butyrospermum Parkii (Shea) Butter	Oleon	6
	Radia 7747	Myristyl Stearate	Oleon	4
	Radia 7490	Glyceryl Stearate and PEG-100 Stearate	Oleon	4
	Ecorol 68/30P	Cetearyl Alcohol	Ecogreen	3
	Jolee 7202	Propylene Glycol Diheptanoate	Oleon	7
	Jolee 7181	Pentaerythrityl Tetraisostearate	Oleon	4
	Radia 7220	Coco Caprylate/Caprate	Oleon	3
	Behentrimonium Chloride	Tocopheryl Acetate	Trulux	3
	Olive Butter	Olea Europaea (Olive) Fruit Oil	Oleon Ltd.	2
	Lucee Oil Avocado RD KH	Persea Gratissima (Avocado) Oil	Oleon	1
PHASE C	Phenoxyethanol	Phenoxyethanol	Sigma	0.7
	Lexgard E	Ethylhexylglycerin	Unipex	0.3
	Provitamin B5	Panthenol	Aroma-Zone	1
	Castor Organic Oil	Ricinus Communis (Castor) Seed Oil	Oleon Ltd.	0.5
	Perfume	Parfum (Fragrance)	/	0.5

Manufacturing procedure

1. Weigh Water and Glycerin in a main beaker, sprinkle Acacia Gum under medium agitation and heat to 75°C.
2. Weigh phase B ingredients in a separate beaker and heat to 75°C with mixing until homogeneous.
3. Add phase B to phase A under high stirring.
4. Cool down to 40°C.
5. Add phase C ingredients.

Naturality profile according to ISO16128 NOI = 1 NOI > 0.5 NOI ≤ 0.5

NATURAL EMULSIFIER

High HLB emulsifiers are often used in hair care to build body of formulations. Jolee 7931 has an HLB equal to 14, which makes it an ideal co-emulsifier for shampoos, conditioners and many more. Next to its emulsifying properties, Jolee 7931 is also an excellent solubilizer. Because of its liquid state at room temperature, it can be used in cold processes, which makes it easy to formulate as well as energy efficient.

Product features

Jolee 7931

INCI

Polgylyceryl-4 Caprate
(and) Aqua

CAS

160391-93-5

Function

Solubilizer
Oil-in-water (O/W) co-emulsifier

Features

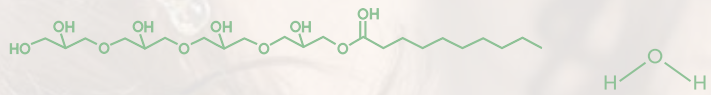
Natural alternative to Polysorbate 20 and PEG-40 Hydrogenated Caster Oil
Cold process co-emulsifier

Usage level

1% - 3%

Sustainability

Readily biodegradable
Natural Origin Index (ISO 16128) = 1



Compatibility with oils and solvents

	Jolee 7931
Sunflower oil	<= 75%
Propylene Glycol	<= 50%
Isopropyl Myristate	<= 50%
Dimethicone	Insoluble
Isoamyl Laurate	<= 75%
Caprylic/Capric Triglyceride	<= 75%

Table 6: Compatibility of Jolee 7931 (Polyglyceryl-4 Caprate (and) Aqua) with various oils and solvents. Solubility was determined when the mixture remained uniform and clear after mixing at 55-60°C and 24h at room temperature..

SHAMPOO BAR

	INGREDIENT	INCI	SUPPLIER	% W/W
PHASE A	Plantacare 818 UP	Coco-glucoside	BASF	15
	Dehyton KE	Cocoamidopropyl Betaine	BASF	5
	Jolee 7931	Polyglyceryl-4 Caprate (and) Water	Oleon	3
	Glycerine 4811	Glycerin	Oleon	5
	Dehyquart Guar N	Guar Hydroxypropyltrimonium Chloride	BASF	0.5
	Lamesoft PO 65	Coco-glucoside (and) Glyceryl Oleate	BASF	3
PHASE B	Jordapon SCI	Sodium Cocoyl Isethionate	BASF	3
PHASE C	**Lucee Oil Coconut RBD KH**	Cocos Nucifera (Coconut) Oil	Oleon Ltd.	2.4
	Jolee 7750	Isoamyl Laurate	Oleon	2.7
	Radia 7744	Myristyl Myristate	Oleon	18.6
	Lucee Btr Cocoa RBD KH	Theobroma Cacao (Cocoa) Seed Butter	Oleon Ltd.	1
	Radia 7747	Myristyl Stearate	Oleon	10
	Candelilla wax	Euphorbia Cerifera (Candelilla) Wax	Oleon Ltd.	2
PHASE D	Vitamin E	Tocopheryl Acetate	Sigma	0.3
	Lexgard O	Caprylyl Glycol	Inolex	0.5
	Lexgard E	Ethylhexyl Glycerin	Inolex	0.5
	Parfum	Parfum (Fragrance)	-	0.5

Manufacturing procedure

1. Weigh all the ingredients of phase A in the main beaker. Heat at 80°C and homogenize for 5 min.
2. Weigh the ingredient of phase B, add slowly to phase A and let them mix at 80°C.
3. Weigh all ingredients of phase C in another beaker, heat up to 80°C. Homogenize the mixture.
4. Add phase C slowly to phase A+B under stirring until a homogenous mixture is obtained.
5. Add phase D under stirring when the mix is at 70°C. Pour mixture in the mold, let it cool down and put it in the freezer for 1h to make the bars.

Naturality profile according to ISO16128 NOI = 1 NOI > 0.5 NOI ≤ 0.5

oleon
a natural chemistry

HEALTH & BEAUTY

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