

## **RADIASTAR 1436**

A vegetable based multibranching  
Guerbet alcohol with a unique  
sensorial skin feel



# PRODUCT PROPERTIES

## APPLICATION PERFORMANCE

- Unique skin feel
- Excellent pigment dispersion properties
- Superior water resistancy
- High gloss
- A versatile texturizer for make-up
- Good film-forming properties

## FUNCTION

Dispersant, conditioner, thickening aid, emollient, film former, solvent.



**100% NATURAL**

**Natural origin index (ISO 16128) = 1**

Radiastar 1436 is derived from **renewable and non-GMO** rapeseed oil.



**INCI** Isocetyl isoarachidol

**CAS** 2773314-89-7

**Chemical formula:**  $C_{36}H_{74}O$

Oleon's Radiastar 1436 is a **multi-branched Guerbet alcohol** with unique properties. Because of the branched structure, Radiastar 1436 is liquid at room temperature which is an exceptional characteristic for a molecule of C36 carbon chainlength. Together with its unique skinfeel, good oxidation stability and excellent pigment dispersion properties, this product is a **superior film-forming emollient for use in a broad range of color cosmetic and personal care formulations.**

### Physicochemical properties

Physical form	Colorless liquid
Cloud point	-29 °C
Color	5 APHA
Iodine value	3,5 g I <sub>2</sub> / 100g
Dynamic viscosity at 25°C	313 mPa.s
Density at 25°C	0,8567 (g/cm <sup>3</sup> )
Refractive index	1,47
Pigment disperion	0,76 g/g red oxide
Interfacial tension (25°C)	28,5 mN/m
Surface tension (25°C)	31,66 mN/m
Polarity	12,64



# PRODUCT FEATURES

## Chemical stability

The **high degree of saturation** ensures chemical stability, a stable color and odor quality and avoids the need for an antioxidant.

## Unique sensorial profile

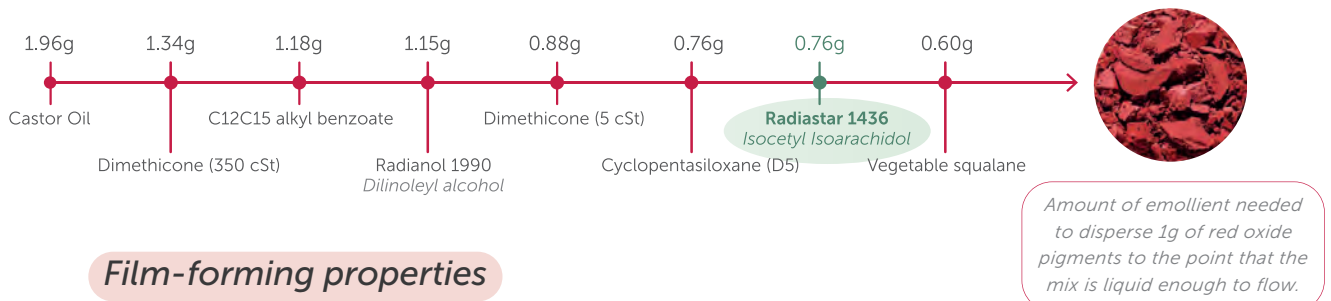
Due to its unique structure, Radiastar 1436 has a **soft and cushioning touch** and leaves a **glossy appearance** to the skin.

## Cold process method

Due to its branched structure, Radiastar 1436 is **liquid at low temperatures** and thus a perfect match for cold process methods.

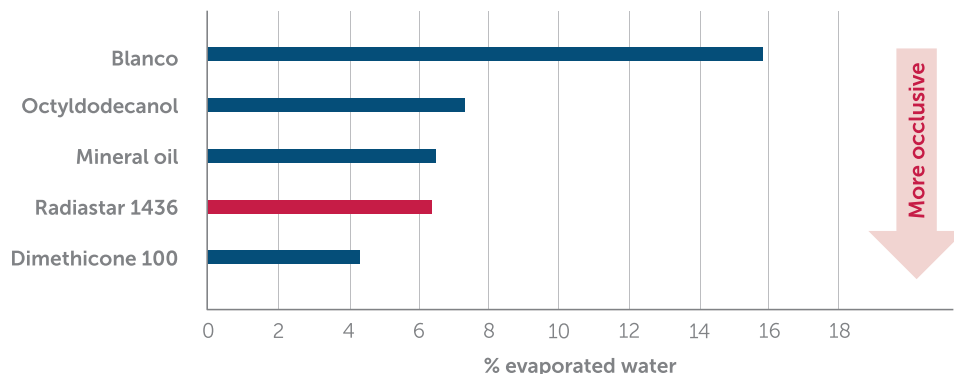
## Disperant properties

Only 0,76 g of Radiastar 1436 is required to disperse one gram of red oxide pigment, which is better than several commercial pigment dispersant emollients like C12C15 alkyl benzoate. Combined with a good spreading ability, **Radiastar 1436 is a very effective and highly efficient dispersant.**



## Film-forming properties

Radiastar 1436 show **good film-forming properties**. Its occlusivity is comparable to mineral oil and better compared to octyldodecanol. Radiastar 1436 is an ideal green alternative to the synthetic film-forming ingredients.



**Graph 1:** Film-forming properties expressed as % water that is evaporated. Evaluation is based on an in-house test measuring water evaporation from a plastic cup at 40 °C. The less water evaporates, the better the film-forming properties of the product.

## Compatibility with typical cosmetic emollients/ humectants

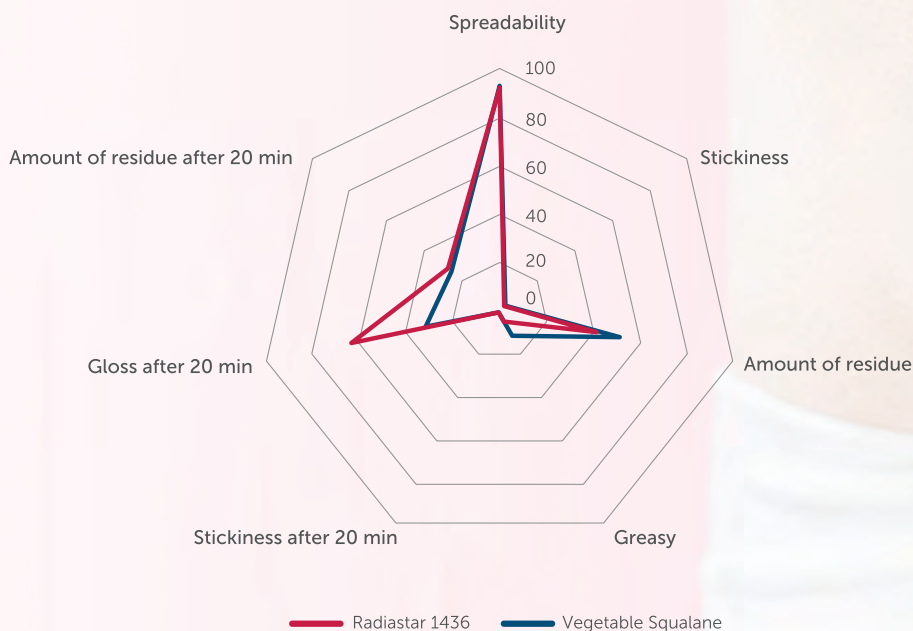
At different ratios, the compatibility of Radiastar 1436 with various solvents and oils was investigated through a visual evaluation. The results show a good stability with medium to apolar products.

	Radiastar 1436
Ethanol	Compatible until 75%
Monopropylene glycol	Not compatible
Isopropyl myristate	Compatible until 75%
Sunflower oil	Compatible until 75%
Isoamyl laurate	Compatible until 75%
C8/C10 triglycerides	Compatible until 75%
Mineral oil	Compatible until 75%
Dimethicone (350cs)	Not compatible

**Table 1:** Compatibility of Radiastar 1436 with various oils and solvents. Compatibility was defined when no phase separation was observed after mixing at 55-60°C and 24hrs at room temperature.

## Vegetable based squalane alternative

Because of its chemical structure, Radiastar 1436 resembles the multibranched structure of vegetable squalane. Both products show comparable sensorial properties. However after application, Radiastar 1436 has a **less sticky afterfeel** compared to squalane. Furthermore, this Guerbet alcohol brings a **nicer gloss** to the formulation.



# APPLICATIONS

## Lipstick

In this lipstick formulation, Radiastar 1436 was proven to create a **solid, uniform layer** on the lips that does not flake or break as the solvent evaporates. The firm deposit formed after application to the lips, shows a good adhesion to the lips while still offering a **flexible covering** that is sturdy enough to flex with lip movements. Furthermore, Radiastar 1436 was shown to **increase the break strength** of the lipstick without increasing the hardness too much. This Guerbet alcohol can thus be used to create a more resilient lipstick without compromising the payoff. Lastly, because of its high refractive index Radiastar 1436 gives a **nice gloss** to the lipstick together with a **high color intensity**.



## How to formulate Red lipstick

	INGREDIENT	INCI	PURPOSE	% W/W
PHASE A	Candelila wax	Euphorbia Cerifera (Candelilla) Wax	Structuring agent	15.7
	Rice wax	Rice bran wax (Oryza Sativa (Rice) Bran Wax)	Structuring agent	14.8
	Beeswax	Cera Alba (Beeswax)	Structuring agent	3.8
	Radia 7744	Myristyl myristate	Consistency agent, emollient	4.6
	Shea Butter	Butyrospermum Parkii (Shea Butter)	Emollient	2.8
	Radia 7610	Triethylhexanoin	Emollient	12.8
	Radia 7104	Caprylic/capric triglycerides	Stabilizing agent	12.8
	Cetearyl alcohol	Cetearyl alcohol	Consistency agent, emollient	4.6
PHASE B	<b>Radiastar 1436</b>	<b>Isocetyl isoarachidol</b>	<b>Emollient</b>	<b>20</b>
	Titanium dioxide	CI 77891	Pigment	1.8
	Unipure Red LC304	CI 15850	Pigment	1.5
	Unipure Red LC328	CI 45410	Pigment	1.5
	BRO-NJE2	CI 77491 (and) Jojoba Esters	Pigment	1
KT- 6213 (Mica Peach Red)	Mica (CI 77019) and CI 77891 and CI 77491	Pearlescent agent	0.2	
PHASE C	Eusolex 2292	Ethylhexyl Methoxycinnamate	UV Filter	1.4
	Vitamin E	Tocopheryl Acetate	Anti-oxidant	0.2
	Strawberry emulco	Aroma	Flavouring agent	0.5

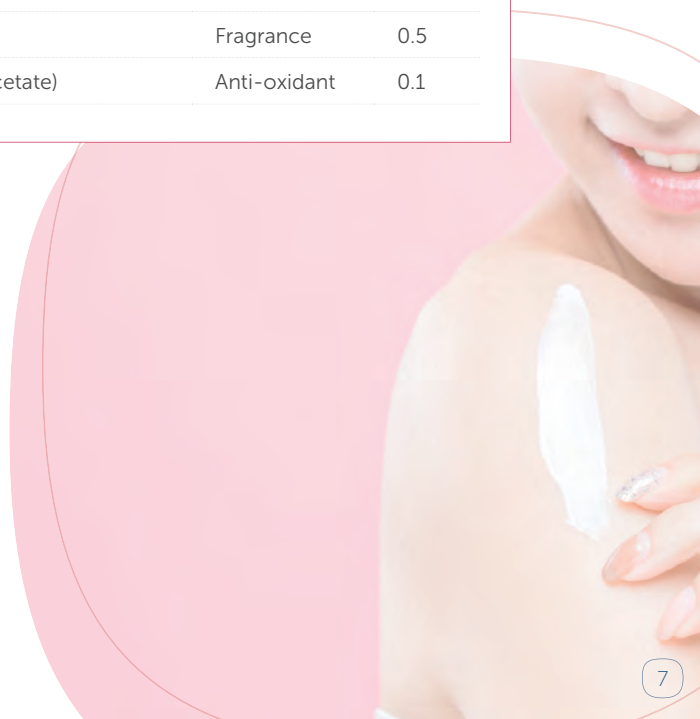
## Sunscreen stick

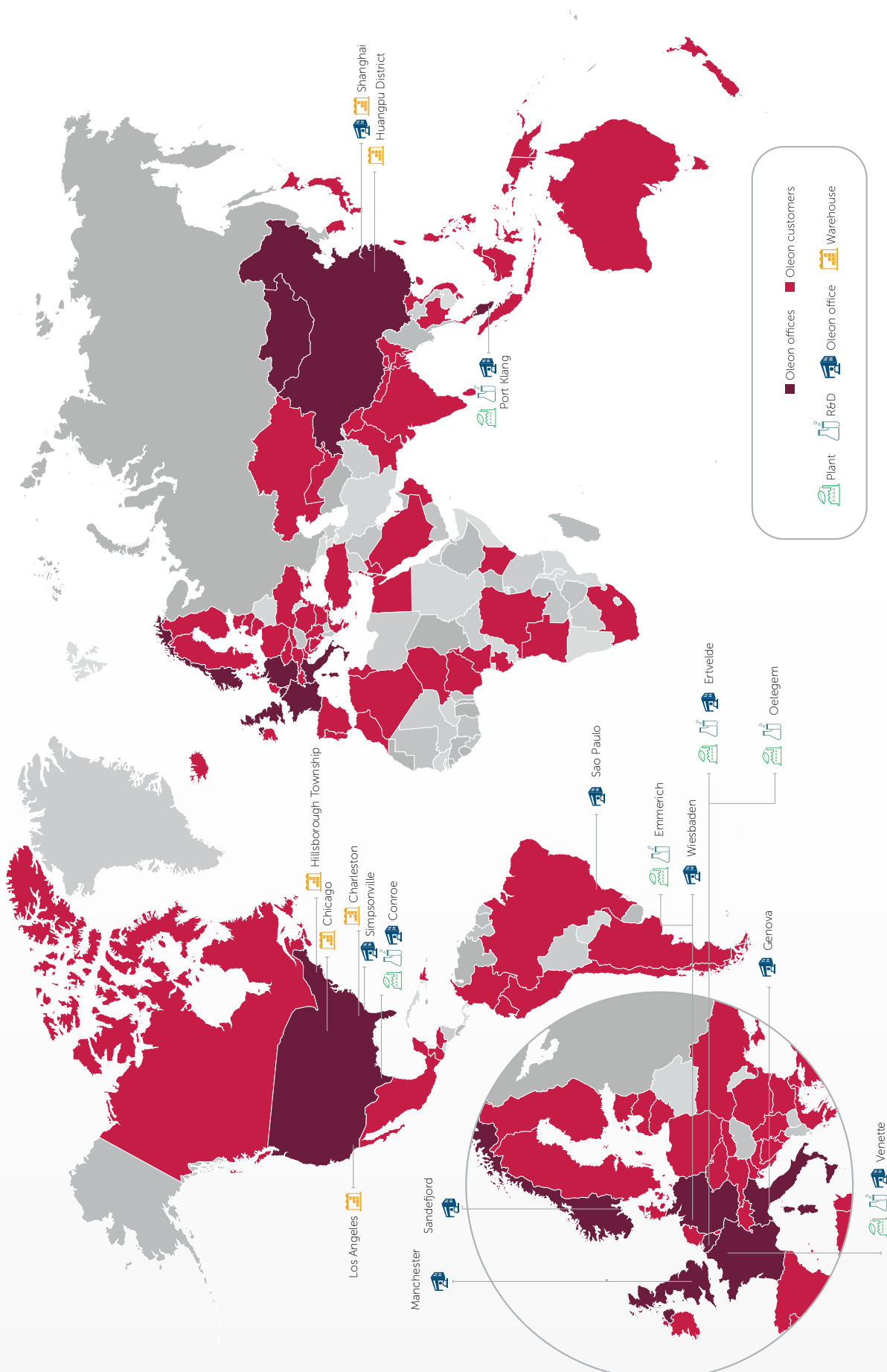
In this sunscreen stick formulation, Radiastar 1436 showed better performance compared to the C12-C15 alkyl benzoate benchmark, leaving **lesser white cast** on the skin. With including Radiastar 1436, a **silky-soft feeling** was obtained which is **not greasy** after applying to the skin.



### How to formulate Sunscreen stick

	INGREDIENT	INCI	PURPOSE	% W/W
PHASE A	Jolee 7799	Isocetyl Isoarachidol, Dilinoleyl Alcohol, Glycerol Monocaprylate, Ethyl Cellulose	Structuring agent	13.4
	AJK OD-2046	Dibutyl Ethylhexanoyl Glutamide (and) Dibutyl Lauroyl Glutamide (and) Octyldodecanol	Structuring agent	30
	Jolee 7245	Polyglyceryl-3 diisostearate	Consistency agent	5
	Radia 6122	Sunflower (Helianthus) seed oil	Emollient	5
	Radiastar 1436	Isocetyl Isoarachidol	Emollient	5
	Shea butter	Butyrospermum Parkii (Shea) Butter	Texturing	3
PHASE B	Radia 7102K	Caprylic/capric triglycerides	Pigment disperser	10
	Radia 7732	Isopropyl palmitate	Pigment disperser	10
	SunZnO-NAS	Zinc Oxide (and) n-octyl triethoxysilane	UV filter	10
	Eusolex T-AVO	Silica (and) Titanium Dioxide (CI 77891)	UV filter	8
PHASE C		Parfum	Fragrance	0.5
		Vitamin E (Tocopherol acetate)	Anti-oxidant	0.1





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