REGU®-FADE

Skin Lightener

Introduction

REGU®-FADE is a preservative free, nature identical *trans*-Resveratrol with an outstanding purity and safety profile that offers multi functional, effective skin lightening properties for a radiant, youthful looking skin. REGU®-FADE is a powder containing a minimum of 99 % *trans*-Resveratrol.

INCI Resveratrol

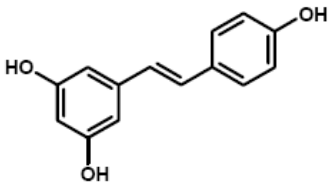
Chemical name 5-[(1E)-2-(4-Hydroxyphenyl) ethenyl]-1,3-benzenediol

Synonyms *trans*-Resveratrol

CAS No 501-36-0

Empirical formula: $C_{14}H_{12}O_3$

Molecular mass: 228.25 g/mol



General properties

- Grayish to tan powder
- Practically odorless
- Solubility: see formulation guideline below
- Sensitive to light

Formulation properties

- Very slightly soluble in water (0.0023 g/100 g)
- Practically insoluble in lipophilic components
- Solubility in Ethanol: 5 g REGU®-FADE/100 g Ethanol (attention: see remarks below)
- Solubility in Propylene Glycol: ca. 10 g REGU®-FADE/100 g Propylene Glycol (attention: see remarks below)
- Solubility in Butylene Glycol: < 0.1 g REGU®-FADE/100 g Butylene Glycol
- Recommended pH of the final formulation: 3 - 6.5, adjust the pH with common neutralizing agents.

Additional information to avoid discoloration

- Formulation under vacuum is recommended.
- Exposure of the final formulation to elevated temperature should be avoided.
- Exposure of the final formulation to air/oxygen should be avoided (recommended is packaging in dispensers).
- Exposure of the final formulation to direct sun light should be avoided (use opaque packaging).
- The addition of UV filters is recommended for day care products.

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- Addition of 0.05 % Sodium Metabisulfite to the formulation is recommended. (DSM prior art WO2008/052674, Beiersdorf patent application WO2011/042073) [1)]

Picture 1: Emulsion with REGU®-FADE + various antioxidants stored @ 50°C for 4 weeks (from left to right: placebo, 0.1 % BHT, 0.2 % Tocopherol, 0.01 % Superoxide Dismutase, 0.05 % Sodium Metabisulfite)

Preparation of Pre-mixture and its incorporation into cosmetic formulations

- REGU®-FADE should be pre-dissolved in the below mentioned solvents or solvent mixtures. For this the solvent needs to be heated up to 40-45°C and then REGU®-FADE can be added under stirring. Make sure it is completely solubilized (check the absence of crystals via microscopy) before proceeding with the formulation process. It is recommended to prepare the pre-mixture shortly before adding it to the cosmetic emulsion.
- For formulations produced by the hot/hot process: The pre-mixture with REGU®-FADE can be added to the formulation at ≤ 40°C or even at room temperature. Homogenize again for 1 minute (or as appropriate for the scheduled quantity).
- For formulations produced by the cold/cold process: The pre-mixture with REGU®-FADE can be added to the oil phase or the water phase (both at room temperature), combine the two phases at room temperature and homogenize as usual. The pre-mixture with REGU®-FADE can also be added to the cosmetic formulation at room temperature. Homogenize again for 1 minute (or as appropriate for the scheduled quantity).
- It is recommended to produce the cosmetic formulation under vacuum or at least homogenize under vacuum (to prevent REGU®-FADE from air/oxygen).
- Suitable solvents/solubilizers for REGU®-FADE are listed in the following tables. The ratio of REGU®-FADE to solubilizer should be 1 to ≥ 10, some examples are provided in the following tables.

How to read the tables:

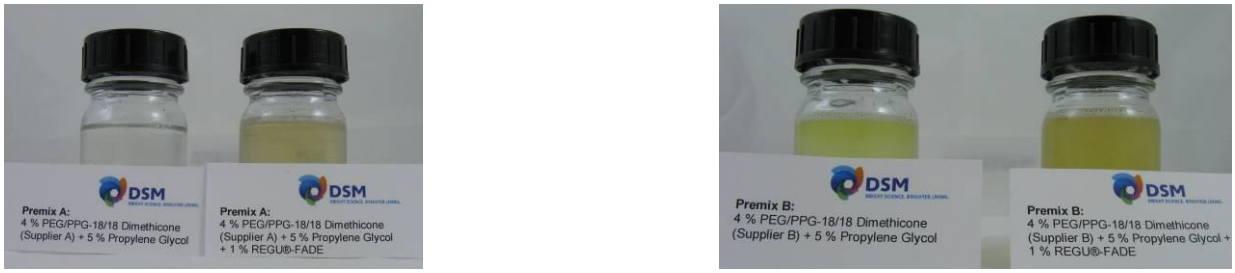
For e.g. 0.1 % REGU®-FADE in 100 g final formulation you have to heat up the below mentioned amount of solvent to 40-45°C. Then add 0.1 g REGU®-FADE and stir until it is dissolved. Then add this pre-mixture to the formulation as described above.

Table 1. Solubility table for REGU®-FADE in PEG/PPG-18/18 Dimethicone / Propylene Glycol

REGU®-FADE [g]	PEG/PPG-18/18 Dimethicone [g]	Propylene Glycol [g]
0.10	1.00	1.00
0.15	1.00	1.00
0.20	1.50	1.00
0.30	2.00	1.00
0.40	2.50	1.00
0.50	3.00	1.00
0.50	2.50	1.50
0.75	3.50	2.00
1.00	4.00	5.00
1.10	5.00 or more → crystallization	8.00

For this solubilizer there is always the addition of Propylene Glycol necessary to get REGU®-FADE dissolved. 1.10 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG/PPG-18/18 Dimethicone / Propylene Glycol. So with this solvent not more than 1.00 % REGU®-FADE are recommended in formulations.

Please consider that the color of the premix may depend on the used quality of solvents used! See examples below:



Picture 2 A + B: Premix as recommended above: 4 % PEG/PPG-18/18 Dimethicone (left: Supplier A, right: Supplier B) + 5 % Propylene Glycol + 1 % REGU®-FADE

Table 2. Solubility table for REGU®-FADE in PEG-20 Methyl Glucose Sesquistearate

REGU®-FADE [g]	PEG-20 Methyl Glucose Sesquistearate[g]
0.10	1.50
0.20	2.50
0.30	4.00
0.40	5.00
0.50	6.00 or more → crystallization

0.50 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG-20 Methyl Glucose Sesquistearate. So with this solvent not more than 0.40 % REGU®-FADE are recommended in formulations.

Table 3. Solubility table for REGU®-FADE in PEG-40 Hydrogenated Castor Oil

REGU®-FADE [g]	PEG-40 Hydrogenated Castor Oil [g]
0.10	1.00
0.15	1.50
0.20	2.00
0.30	3.00
0.40	4.00
0.50	5.00 or more → crystallization

0.50 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG-40 Hydrogenated Castor Oil. Consequently with this solvent not more than 0.40 % REGU®-FADE are recommended in formulations.

Table 4. Solubility table for REGU®-FADE in PEG-20 Stearate

REGU®-FADE [g]	PEG-20 Stearate[g]
0.10	1.50
0.15	2.00
0.30	3.50
0.40	4.50
0.50	5.50 or more → crystallization

0.50 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG-20 Stearate. Consequently with this solvent not more than 0.40 % REGU®-FADE are recommended in formulations.

Table 5. Solubility table for REGU®-FADE in PPG-1-PEG-9 Lauryl Glycol Ether

REGU®-FADE [g]	PPG-1-PEG-9 Lauryl Glycol Ether [g]
0.10	1.00
0.15	1.50
0.20	2.00
0.30	3.00
0.40	4.00
0.50	5.00 or more → crystallization

0.50 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PPG-1-PEG-9 Lauryl Glycol Ether. So with this solvent not more than 0.40 % REGU®-FADE are recommended in formulations.

Table 6. Solubility table for REGU®-FADE in Coceth-7 and PPG-1-PEG-9 Lauryl Glycol Ether and PEG-40 Hydrogenated Castor Oil

REGU®-FADE [g]	Coceth-7 and PPG-1-PEG-9 Lauryl Glycol Ether and PEG-40 Hydrogenated Castor Oil [g]
0.10	1.00
0.15	1.50
0.20	2.00
0.30	3.00
0.40	4.00 or more → crystallization

0.40 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of Coceth-7 and PPG-1-PEG-9 Lauryl Glycol Ether and PEG-40 Hydrogenated Castor Oil. So with this solvent not more than 0.30 % REGU®-FADE are recommended in formulations.

Table 7. Solubility table for REGU®-FADE in Ceteareth-12

REGU®-FADE [g]	Ceteareth-12 [g]
0.10	2.00
0.20	4.00
0.30	0.60 or more → crysallization

0.30 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of Ceteareth-12. So with this solvent not more than 0.20 % REGU®-FADE are recommended in formulations.

Table 8. Solubility table for REGU®-FADE in PEG-30 Glyceryl Stearate

REGU®-FADE [g]	PEG-30 Glyceryl Stearate [g]
0.10	2.00
0.20	4.00
0.30	6.00 or more → crystallization

0.30 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG-30 Glyceryl Stearate. So with this solvent not more than 0.20 % REGU®-FADE are recommended in formulations.

Table 9. Solubility table for REGU®-FADE in PEG-7 Glyceryl Cocoate

REGU®-FADE [g]	PEG-7 Glyceryl Cocoate [g]
0.10	2.00
0.20	4.00
0.30	6.00 or more → crystallization

0.30 % REGU®-FADE in a formulation re-crystallize, even with higher amounts of PEG-7 Glyceryl Cocoate. So with this solvent not more than 0.20 % REGU®-FADE are recommended in formulations.

As PEG-free solvents you can also make use of the following non-ionic liquid surfactants:

Table 10. Solubility table for REGU®-FADE in Cocamide DIPA

REGU®-FADE [g]	Cocamide DIPA [g]
0.10	2.00

Table 11. Solubility table for REGU®-FADE in Lauramide DIPA

REGU®-FADE [g]	Lauramide DIPA [g]
0.10	2.00

- Note: in case fine crystals appear in the formulation (check by microscope after at least two days at cold storage temperature, 5°C), optimize the pre-dissolving system by adapting concentrations or combining with other solubilizers.

Remark:

1. The above mentioned solvent systems have been tested in different emulsions (see examples in appendix). Nevertheless the solubility is always dependant on the whole final formulation. So the formulator should monitor in each formulation potential re-crystallization during storage, especially at 5°C.
2. There are other solvents available where REGU®-FADE is very well soluble in the solvent itself (e.g. Propylene Glycol, Ethanol, PEG-600). But in the formulation we found re-crystallization over time. So the solubility is dependant on the whole final system. Finally the formulator should monitor in each formulation potential re-crystallization during storage, especially at 5°C.

Application and recommended use level

- REGU®-FADE can be used for different kinds of products like O/W, W/O or W/Si formulations, toners, as well as in gel formulations.
- Compatible with most cosmetic ingredients if no pH value above 6.5 is required.
    - Compatible with UV filters: e.g. PARSOL® 1789, PARSOL® MCX, PARSOL® SLX, PARSOL® EHS, PARSOL® HMS, PARSOL® 5000, PARSOL® TX, PARSOL® TX 50AB
    - Compatible with active ingredients: e.g. Niacinamide PC, SYN®-TACKS, SYN®-AKE, SYN®-COLL, SYN®-HYCAN, REGU®-SLIM, STIMU-TEX® AS, PEPHA®-TIGHT, dl-alpha Tocopheryl Acetate
    - Compatible with thickeners: e.g. Xanthan Gum, Cellulose derivatives, Polyacrylate thickeners up to pH 6.5.
- Recommended use level for skin care preparations: up to 1 %.

Appendix

Test formulation examples

They all fulfill our stability criteria (no phase separation, no discoloration, no crystals at 5°C & RT & 40°C for at least 3 months).

[1)] Customers are responsible themselves for an evaluation of the patent situation for their intended use of REGU®-FADE. Particularly if they combine it with additional active components, they may infringe a valid dominating third party patent covering this active component or the combination with REGU®-FADE. DSM does not take any responsibility for any such possible patent infringement.

Whitening Day Care with UV-Protection

With 1.0 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	**PARSOL® 1789**	Butyl Methoxydibenzoylmethane (Avobenzone; USAN)	2.00	100288
	PARSOL® 340	Octocrylene (Octocrilene; USAN)	6.00	100288
	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	7.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	Myritol PC	Propylene Glycol Dicaprylate/Dicaprate	5.00	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	1.00	100288
	Dow Corning 190 Fluid	PEG/PPG-18/18 Dimethicone	4.00	100404
	1,2-Propanediol	Propylene Glycol	5.00	100134
D	Triethanolamine Care	Triethanolamine	q.s.	100327
E	Ethanol	Alcohol	2.00	100230

100250-082

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D, E.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 48900 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100507 Innospec
100327 BASF
100404 Dow Corning Corp
100413 Gattefossé S.A.
100134 Fluka Chemie AG
100398 Sasol Germany GmbH
100230 Merck KGaA

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Skin Lightener with UV-Protection

With 0.05 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	**PARSOL® 1789**	Butyl Methoxydibenzoylmethane (Avobenzone; USAN)	2.00	100288
	PARSOL® 340	Octocrylene (Octocrilene; USAN)	6.00	100288
	Myritol PC	Propylene Glycol Dicaprylate/Dicaprate	6.50	100396
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Finsolv TN	C12-15 Alkyl Benzoate	8.50	100507
	Lanette O	Cetearyl Alcohol	2.00	100396
	Dermofeel G 50	Polyglyceryl-5 Oleate	2.50	100491
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.05	100288
	1,2-Propanediol	Propylene Glycol	5.00	100134
D	Triethanolamine Care	Triethanolamine	q.s.	100327
E	Ethanol	Alcohol	2.00	100230

100250-093

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D, E.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 50300 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100507 Innospec
100400 CP Kelco
100327 BASF
100491 Dr Straetmans
100413 Gattefossé S.A.
100134 Fluka Chemie AG
100398 Sasol Germany GmbH
100230 Merck KGaA

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Whitening Day Care

With 0.1 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	**PARSOL® 1789**	Butyl Methoxydibenzoylmethane (Avobenzone; USAN)	2.00	100288
	PARSOL® 340	Octocrylene (Octocrilene; USAN)	6.00	100288
	Imwitor 372 P	Glyceryl Stearate Citrate	2.50	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Finsolv TN	C12-15 Alkyl Benzoate	8.50	100507
	Lanette O	Cetearyl Alcohol	2.00	100396
	Myritol PC	Propylene Glycol Dicaprylate/Dicaprate	6.50	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.10	100288
	Arlamol PS15E	PPG-15 Stearyl Ether	10.00	100299
	1,2-Propanediol	Propylene Glycol	5.00	100134
D	Triethanolamine Care	Triethanolamine	q.s.	100327
E	Ethanol	Alcohol	2.00	100230

100250-096

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D, E.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 55100 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100507 Innospec
100230 Merck KGaA
100327 BASF
100491 Dr Straetmans
100413 Gattefossé S.A.
100299 Croda Inc.
100134 Fluka Chemie AG
100398 Sasol Germany GmbH

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Lightening Skin Nutrient Cream

With 0.1 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	13.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.1	100288
	Dow Corning 190 Fluid	PEG/PPG-18/18 Dimethicone	4.00	100404
	1,2-Propanediol	Propylene Glycol	5.00	100134
D	Triethanolamine Care	Triethanolamine	q.s.	100327
E	**Niacinamide PC**	Niacinamide	2.00	100288
	Water dem.	Aqua	10.00	

100250-154

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C, Niacinamide PC in part E
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D, E.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 39900 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100507 Innospec
100327 BASF
100404 Dow Corning Corp
100413 Gattefossé S.A.
100134 Fluka Chemie AG
100398 Sasol Germany GmbH

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Moisturizing Skin Lightener

With 0.2 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	**PARSOL® 1789**	Butyl Methoxydibenzoylmethane (Avobenzone; USAN)	2.50	100288
	PARSOL® 340	Octocrylene (Octocrilene; USAN)	6.00	100288
	Imwitor 372 P	Glyceryl Stearate Citrate	1.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	Dermofeel BGC	Butylene Glycol Dicaprylate/Dicaprate	3.00	100491
	Dow Corning 245 Fluid	Cyclopentasiloxane	6.00	100404
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	D-Panthenol 75L	Panthenol	2.00	100288
	Glycerin 99.5%	Glycerin	2.00	100396
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.20	100288
	1,2-Propanediol	Propylene Glycol	1.00	100134
	Dow Corning 190 Fluid	PEG/PPG-18/18 Dimethicone	2.00	100404
D	Triethanolamine Care	Triethanolamine	q.s.	100327
E	Ethanol	Alcohol	2.00	100230

100250-165

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D, E.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 9620 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100507 Innospec
100230 Merck KGaA
100327 BASF
100491 Dr Straetmans
100413 Gattefossé S.A.
100404 Dow Corning Corp
100134 Fluka Chemie AG
100398 Sasol Germany GmbH

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Whitening Repair

With 0.3 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Finsolv TN	C12-15 Alkyl Benzoate	13.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Preservative		q.s.	
B	Carbopol Ultrez 21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.25	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.30	100288
	Cremophor RH 40	PEG-40 Hydrogenated Castor Oil	3.00	100327
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-183

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 23900 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100327 BASF
100507 Innospec
100398 Sasol Germany GmbH

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Smooth & Bright Skin Care

With 0.1 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	1.50	100398
	Myritol 318	Caprylic/Capric Triglceride	10.00	100396
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Glucate SS Emulsifier	Methyl Glucose Sesquistearate	1.0	100435
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Carbopol Ultrez 21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.1	100288
	Glucamate SSE-20 Emulsifier	PEG-20 Methyl Glucose Sesquistearate	1.5	100435
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-205

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 26200 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100327 BASF
100507 Innospec
100398 Sasol Germany GmbH
100400 CP Kelco

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Light Feel Skin Tone Corrector

With 0.15 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Myritol 318	Caprylic/Capric Triglyceride	8.00	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.15	100288
	Eumulgin HPS	Coceth-7 & PPG-1-PEG-9 Lauryl Glycol Ether & PEG-40 Hydrogenated Castor Oil	1.50	100396
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-248

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 15500 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100327 BASF
100507 Innospec
100413 Gattefossé S.A.
100398 Sasol Germany GmbH

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Soft Touch Whitener

With 0.1 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Myritol 318	Caprylic/Capric Triglyceride	8.00	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.10	100288
	Tagat S	PEG-30 Glyceryl Stearate	1.00	100415
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-259

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 20800 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100327 BASF
100413 Gattefossé S.A.
100415 Evonik Goldschmidt GmbH
100398 Sasol Germany GmbH
100507 Innospec

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Even Skin Tone Lotion

With 0.2 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Myritol 318	Caprylic/Capric Triglyceride	8.00	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.2	100288
	Eumulgin B1	Ceteareth-12	4.00	100396
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-304

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 15800 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100327 BASF
100507 Innospec
100413 Gattefossé S.A.
100398 Sasol Germany GmbH

DSM Nutritional Products, Personal Care, P.O.Box 2676, CH-4002 Basel, Switzerland

Whitening Soft Cream

With 0.2 % REGU®-FADE

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Imwitor 372 P	Glyceryl Stearate Citrate	2.00	100398
	Lipocire NA 10 Pastilles	Hydrogenated Coco-Glycerides	1.00	100413
	Finsolv TN	C12-15 Alkyl Benzoate	5.00	100507
	Lanette O	Cetearyl Alcohol	1.50	100396
	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	0.20	100288
	Myritol 318	Caprylic/Capric Triglyceride	8.00	100396
	Preservative		q.s.	
B	Keltrol CG-T	Xanthan Gum	0.15	100400
	Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30	100435
	Water dem.	Aqua	ad 100	
C	**REGU®-FADE**	Resveratrol	0.20	100288
	Tagat S	PEG-30 Glyceryl Stearate	4.00	100415
D	Triethanolamine Care	Triethanolamine	q.s.	100327

100250-317

Procedure

1 Heat part A to 80°C while stirring.
2 Heat part B to 80°C and add to part A while stirring and homogenize the emulsion.
3 Dissolve REGU®-FADE at 40°C in part C.
4 Cool down the emulsion to 40°C and add part C, homogenize again.
5 Add part D.

Technical Data

pH: 5.5-6.0 **Viscosity**(Brookfield RV6/10rpm): 18200 cps

Supplier

100288 DSM Nutritional Products
100396 Cognis Deutschland GmbH&Co.KG
100435 Lubrizol
100400 CP Kelco
100327 BASF
100413 Gattefossé S.A.
100415 Evonik Goldschmidt GmbH
100507 Innospec
100398 Sasol Germany GmbH

[1] Customers are responsible themselves for an evaluation of the patent situation for their intended use of REGU®-FADE. Particularly if they combine it with additional active components, they may infringe a valid dominating third party patent covering this active component or the combination with REGU®-FADE. DSM does not take any responsibility for any such possible patent infringement.

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