NATURAL & BIODEGRADABLE INGREDIENTS



SUNSCREEN

Functions Stabilization of all ingredients Easier distribution on the skin Sensory improver

Design 2 in 1 stabilizer Microcrystalline Cellulose and Cellulose Gum ECOCERT/COSMOS

J. RETTENMAIER & SÖHNE





MANUFACTURER OF NATURAL INGREDIENTS GERMAN QUALITY Fibers designed by Nature

Selection

	VIVAPUR® CS TEX Sun	VIVAPUR [®] CS 4 FM	VIVAPUR® CS 9 FM
INCI	Microcrystalline Cellulose, Cellulose Gum	Microcrystalline Cellulose	Microcrystalline Cellulose
Color	_	White	White
Appearance	White powder		_
Structure	_	Particle	Particle
Particle size	_	4 µm	9 µm
Viscosity (2%)	1500 mPas	_	_
Clarity	Opaque	_	-
Bulk density	_	150 g/l	190 g/I
Specific density	_	1.5 g/cm ³	1.5 g/cm ³
Heavy metals	Max. 10 ppm	Max. 10 ppm	Max. 10 ppm
Total aerobic microbial count	5 x 10² cfu/g	1 x 10² cfu/g	1 x 10² cfu/g
Total yeasts moulds count	1 x 10² cfu/g	1 x 10² cfu/g	1 x 10² cfu/g
Water binding capacity	_	5.5 g/g	4.5 g/g
Oil binding capacity	_	2.5 g/g	4 g/g
Acid stability	•	•	•
Alkali stability	•	•	•
Fastness to light	•	•	٠
CAS-No	9004-34-6 9004-32-4	9004-34-6	9004-34-6
Packaging	25 kg bag	10 kg bag	15 kg bag
Pallet weight	600 kg	180 kg	270 kg
Minimum order quantity	25 kg	10 kg	15 kg

✓ highly recommended

● stable ○ limited



Characteristics

	VIVAPUR® CS TEX Sun	VIVAPUR [®] CS 4 FM	VIVAPUR® CS 9 FM
ECOCERT/COSMOS	Available	Available	Available
Biodegradable	Readily	Readily	Readily
Ecofriendly	Yes	Yes	Yes
Natural origin	Wood	Wood	Wood
Safe and edible	Yes	Yes	Yes
Odor	Odor free	Odor free	Odor free
Taste	Tasteless	Tasteless	Tasteless
Solubility in water	Partly soluble	Insoluble	Insoluble
Solubility in oil	Insoluble	Insoluble	Insoluble
Solubility in organic solvents	Insoluble	Insoluble	Insoluble
Inert in formulation	Yes	Yes	Yes
Hydrophilic	Yes	Yes	Yes
Lipophilic	_	Yes	Yes
Usage	Cold or hot process	Cold or hot process	Cold or hot process
Implementation in production process	Beginning	Anytime	Anytime
Influence on pH-value	No influence	No influence	No influence
pH-stability	рН 3 - рН 12	pH 2 - pH 13	pH 2 - pH 13
Thermostability	Up to 100 °C	up to 120 °C	Up to 120 °C

SUNSCREEN

Excellent Sprayable



Without VIVAPUR[®] CS TEX Sun

Functions

Stabilization of all ingredients Easier distribution on the skin Sensory improver Sprayable Homogeneous spray mist High thixotropic behavior

Description

VIVAPUR[®] CS TEX Sun is the perfect stabilizer for all kinds of sunscreen products such as lotions. VIVAPUR[®] CS TEX Sun is a natural 2 in 1 stabilizer and is specially developed for sunscreen.

It helps you to create a very homogeneous spray mist and unique skin feel. Due to the high thixotropic behavior you have an easier distribution of the sunscreen on the skin.

In parallel you get a homogeneous stabilization and long term stability.

The skin feel of **VIVAPUR® CS TEX Sun** is silky and creamy due to the high concentration of Microcrystalline Cellulose.

VIVAPUR® CS 9 FM is the perfect match for luxury sensory improvements. The superfine Microcrystalline Cellulose with an excellent skin feel is the right product for all kind of sunscreen formulations.



With VIVAPUR[®] CS TEX Sun

Use Level

1 % to 3 %

Application Guide

VIVAPUR® CS TEX Sun can be dispersed with usual equipment used in the cosmetic industry.

Disperse **VIVAPUR® CS TEX Sun** with medium or high shear forces in demineralized water. A concentration of 2 % to 3 % is recommended. For optimal results let the suspension rest for at least 15 minutes. After activation of **VIVAPUR® CS TEX Sun** add the remaining ingredients, homogenize with constant slow mixing.

Add **VIVAPUR[®] CS 9 FM** at any time into your formulation and mix with low, medium or high shear forces for some minutes until homogenous distributed, depending on viscosity.



Formultaions Moisturizing Sun Shield Spray with Folic Acid & Fermented Olive Oil

Phase	Ingredient		INCI	Function	%
A	Demineralized Water		Aqua	Solvent	42.3
	VIVAPUR® CS TEX Sun		Microcrystalline Cellulose, Cellulose Gum	Stabilizer, Thickener	2.0
	VIVAPUR® CS 032 XV		Microcrystalline Cellulose, Xanthan Gum	Stabilizer, Thickener	1.0
	Glycerine		Glycerin	Humetcant	3.0
B	Tween 20		Polysorbate 20	Snoothing	2.0
	Ferment Oil Olive	Pseud	ozyma Epicola / Soybean Flour / Olive Fruit Oil Ferment Filtrate	Anti- Oxidant	2.0
_	CCTG	Caprylic / Capric Triglyceride		Emollient	4.0
	Nish 1040		Dimethicone and Dimethiconol		2.0
	Nish 3CST		Dimethicone	Emollient	2.0
	Demineralized Water		Aqua		30.0
С	Suncat DE	Methoxy	Water & Ethylhexyl Methoxycinnamate & Butyl dibenzoylmethane & Benzophenone-3 & Phospholipidis & 1,3- Butylene Glycol	SPF	5.0
D	Aqua Provita D3		Glycerine, Methyl-B-Cyclodextrine		2.0
U	Silysili		Hydogenated Polyisobutene	Emollient	2.0
E	Fragrance		Fragrance		0.5
	Preservative		Preservative		0.2

Formulated by KVL

Properties

Very comfortable new skin feel, Sprayable due to synergism effect with xanthan gum. Pump able and spray able.

Uses

Skin care, Sun care

Process

Homogenized water, **VIVAPUR® CS TEX Sun**, **VIVAPUR® CS 032 XV** and Glycerine till it become good slurry. Add phase B ingredients into Phase A one by one in continue mixing.

Dissolve phase C in another container.

Add step 3 in phase A with continue mixing.

Add phase D one by one in phase A in continue mixing.

Add phase E one by one in phase A mixed it uniformly.

Formulations

30 UVA SPF Mist - Face & Body

SKC108.17.24 Softness, diffuse spray and lightness

Phase	Ingredient	INCI	Function	%
A	Demineralized Water	Aqua	Solvent	Qsp
	Edeta [®] BD	Disodium EDTA	Chelating agent	0.2
В	VIVAPUR [®] CS TEX Sun	Microcrystalline Cellulose, Cellulose Gum	Stabilizer, Thickener	2.0
	Preservative	Preservative	Preservative	Qs
	Eumulgin [®] SG	Sodium Stearoyl Glutamate	Anionic emulsifier O/W	0.8
	Uvinul [®] MC 80	Ethylhexyl Methoxycinnamate	UVB filter	10.0
С	Uvinul [®] A Plus	Diethylamino Hydroxybenzoyl Hexyl Benzoate Bis-Ethylhexyloxyphenol Methoxyphenyl	UVA filter	8.0
	Tinosorb [®] S	Triazine	UVA, UVB filter	1.8
	Cetiol [®] CC/MB	Dicaprylyl Carbonate	Emollient	5.0
	Cetiol® B	Dibutyl Adipate	Emollient	5.0
D	Cetiol [®] Ultimate	Undecane & Tridecane	Emollient	4.0

Formulated by AMI CHIMIE, France

Percentage of NATURAL with formulation water 62.2 % Percentage of NATURAL ORIGIN with formulation water 73.9 %

Process

Heat the aqueous phase A to 80 °C. Disperse the **VIVAPUR**[®] **CS TEX Sun** in the aqueous phase for 1 min with moderate agitation, then 5 min with high agitation dissolver plate at 2 000 rpm. Heat the oily phase C to 80 - 85 °C with stirring until complete homogenization of the UV filters. Make the emulsion by pouring the oily phase C into the gel. A + B at 60 °C, add Cetiol[®] Ultimate and allow to cool with stirring. Adjust the pH to around 6.5 - 7.

Characteristics

pH: 6.5 - 7 Viscosity (Brookfield, RVT, spindle 4, speed 10): 4 000 – 6 000 mPa.s



Formulations

Easy Solution Sun Care Spray – SPF 25-30

SKC113.17.02 Yellow sun spray

Phase	Ingredient	INCI Function	%
٨	Demineralized Water	Aqua Solvent	Qsp
A	EDETA® BD	Disodium EDTA Chelating agent	0.05
В	VIVAPUR® CS TEX Sun	Microcrystalline Cellulose, Cellulose Gum Gelling agent, Stabilizer, Thickener	2.5
С	Eumulgin [®] SG	Sodium Stearoyl Glutamate Anionic Emulsifier H/E	1.0
	Cetiol® C5	Coco-Caprylate Emollient	4.0
	Cetiol [®] B	Dibutyl Adipate Emollient	3.5
	Uvinul [®] A PLUS B	Ethylhexyl Methoxycinnamate & DiethylaminoBroad spectrumHydroxybenzoyl Hexyl BenzoateUV filter	15.0
	Preservative	Preservative Preservative	Qs
D	Tinosorb [®] S Aqua	Aqua & Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine & Polymethyl Methacrylate & Sodium Laureth Sulfate & Aminomethyl Propanol	5.0
Е	Cetiol [®] Ultimate	Undecane & Tridecane Emollient	2.0
F	Parfum Monoï et Tiaré (Robertet)	Parfum Perfume	0.15
	Solution d'acide citrique à 20 %	Aqua & Citric Acid Adjust pH	

Formulated by AMI CHIMIE, France

Process

Heat phases A and C to 80 °C.

Disperse **VIVAPUR[®] CS TEX Sun** in the aqueous phase, A one minute under low agitation, then 5 min with vigorous stirring discover plate at 2 000 rpm).

Make the emulsion by pouring the phase C into A + B with high stirring. Add phase D at 75 $^{\circ}$ C with stirring. At 60 $^{\circ}$ C add phase E.

At 30 °C, add the F phase. Adjust the pH 6.5 – 7.

Characteristics

pH: 6.5 - 7 Viscosity (Brookfield, RVT, spindle 4, speed 10): 6 000 – 8 000 mPas

Formulations

JRS Sun Protection Spray 50+

JRS SPS2018D02

Phase		Ingredient	INCI	Function	%
	1	Parsol 1789	Butyl Methoxydibenzoylmethane	UV A Filter, oil soluble	5.0
	2	Parsol TX	Titanium Dioxide, Silica, Dimethiocone	UV Filter, inorganic	3.0
	3	Amphiosil K	Potassium Cetyl Phosphate	Emulsifier	2.0
	4	Tego Alkanol1618	Cetearyl Alcohol	Emulsifier	1.2
А	5	Parsol 340	Octocrylene	UV Filter, hydrophobic	14.0
	6	Parsol SLX	Polysilicone-15	UV B Filter, not water soluble	2.0
	7	dl-alpha-Tocopheryl Acetate	Tocopheryl Acetate	Antioxidant	0.5
	8	Finsolv TN	C12-15 Alkyl Benzoate	Emollient	3.0
	9	Dub dis	Diisopropyl Sebacate	Emollient	5.0
		VIVAPUR® CS TEX Sun	Microcrystalline Cellulose, Cellulose Gum	Thickener, Stabilizer	1.2
В	1	Demineralized Water	Aqua	Solvent	44.3
	2	Glycerin 86.5 %	Glycerin	Humectant	3.0
С	1	Trizma Base	Tromethamine	pH adjustment	pH>7, QS
	1	Trizma Base	Tromethamine	pH adjustment	1.0
D	2	Parsol HS	Phenylbenzimidazole Sulfonic Acid	UV B Filter	2.0
	3	Demineralized Water	Aqua	Solvent	10.0
	1	VIVAPUR® CS 9 FM	Microcrystalline Cellulose	Sensory modifier	2.0
E	2	Germaben II	Propylenglykol+Diazolidinyl Urea+Methylparaben+Propylpraben	Preservative	0.8

Formulated by JRS

Process

Step 1:

Add A1-A4 (solids) together in a beaker.

Add A5-A9 (liquids) in another beaker and stir (magnetic stirrer) .

Add A1-A4 into A5-A9 while stirring and slowly heat to 85° C.

Step 2:

Add demineralized water and **VIVAPUR® CS TEX Sun** in a beaker and homogenize with Ultra Turrax high speed dissolver for at least 2 min at 9 500 rpm.

Then Add B2 and homogenize again with Ultra Turrax for 30 s.

Heat the mixture to 80° C while stirring (magnetic stirrer).

Step 3:

Add B to A and homogenize with Ultra Turrax for at least 30s.

Step 4:

Let the emulsion cool down to 55 $\,^\circ$ C under gentle stirring. Check pH and adjust with Tromethamin phase C to >7 if necessary .

Step 5:

Mix D separatelyand check pH of the solution (> 7). Add D to the emulsion under stirring.

Step 6:

Add E1 and E2 under stirring.

Step 7:

Homogenize all with Ultra Turrax for at least 30s. Let cool down to ambient temperature.



Yellow Solar Spray SPF 50

SKC114.17.01 Photostable mist SPF 50

Phase	Ingredient	INCI	Function	%
А	Demineralized Water	Aqua	Solvent	Qsp
	EDETA® BD	Disodium EDTA	Chelating Agent	0.2
В	VIVAPUR [®] CS TEX Sun	Microcrystalline Cellulose, Cellulose Gum	Stabilizer, Thickener	2.0
	Eumulgin [®] SG	Sodium Stearoyl Glutamate	Anionic emulsifying H/E	1.0
	Cetiol [®] CC	Dicaprylyl Carbonate & Tocopherol & Soybean Oil	Emollient	5.0
С	Cetiol [®] B	Dibutyl Adipate	Emollient	5.0
	Uvinul [®] MC 80	Ethylhexyl Methoxycinnamate	UVB filter	10.0
	Uvinul [®] A PLUS	Diethylamino Hydroxybenzoyl Hexyl Benzoate	UVA filter	10.0
	Uvinul [®] T 150	Ethylhexyl Triazone	UVB filter	2.5
	Tinosorb [®] S	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	Broad spectrum UV filter	3.0
	Preservative	Preservative	Preservative	Qsp
D	Cetiol [®] Ultimate	Undecane & Tridecane	Emollient	3.0
_	Vitamin E Acetate Care	Tocopheryl Acetate	Antioxidant	0.5
E	20 % Citric acid solution	Aqua & Citric Acid	pH adjuster	0.41

Formulated by AMI CHIMIE, France

Process

Heat Phase A and C up to 80 °C.

Disperse **VIVAPUR® CS TEX Sun** in aqueous phase A, one minute under low agitation, then 5 minutes under high agitation with dissolver plate at. Then heat phase A + B and C in separate containers up to 80 °C. Create the emulsion by pouring phase C in A + B with stirring.

At 60 °C, add phase D. At 30 °C, add phase E. Adjust pH 6.5 - 7.

Characteristics of the formula

pH: 6.5 – 7 Viscosity (Brookfield, RVT, spindle 4, speed 10): 5 000 – 7 000 mPas

SUNSCREEN



Dispersion Regulations

General information

Generally the dissolution / dispersion (=activation) of JRS thickeners / stabilizers should be done in deionized water to obtain the optimal performance. Please activate the products first in deionized water and then add the other ingredients. The products can not be activated in oil.

Different types of stirrers

Standard Propeller Stirrer Fig. 1 Dissolving Plate Fig. 2 Rotor / Stator Dissolver (e.g. "Ultra Turrax", IKA), High Speed Mixer (e.g. "Waring Blender"), High Shear Homogenizer at 5000 rpm or more Fig 3

Dissolving VIVASTAR® CS 302 / 352 SV

Dissolve VIVASTAR by adding it slowly step by step into deionized water under stirring with propeller stirrer or dissolver plate with 1000 – 2000 rpm for approx. 15 minutes or until completely dissolved. While homogenizing thickening will occur.

VIVASTAR[®] CS 152 HV

1.) Hot dissolving:

a) Heat the water to more than 70 °C. Then add the **VIVASTAR® CS 152 SV.** under stirring (e.g. propeller) to the hot water. Cool down the solution under stirring for 30 min or until product is completely dissolved and viscosity is developed.

Stirrer: normal propeller stirrer at approx. 500 – 1000 rpm or more (depending on viscosity, batch size, stirrer size).

b) Hot dissolving with faster cooling:

Heat 1/3rd of the water amount to 90 °C. Then add the **VIVASTAR**[®] **CS 152 SV** under stirring (e.g. propeller) to the hot water. Add the remaining cold water to cool down the dispersion under stirring. The powder begins to hydrate and viscosity is increasing. Continue stirring for at least 30 min at approx. 500 – 1000 rpm or more (depending on viscosity, batch size, stirrer size).

2.) Cold dissolving (room temperature):

Add the **VIVASTAR® CS 152 SV** very slowly step by step under strong stirring to the water. Stir until product is completely dissolved and viscosity is developed. Stirrer: dissolving blade at min. 2000 rpm or more. Or rotor / stator dissolver (e.g. "Ultra Turrax, IKA) at 5000 rpm or more. Or propeller at 2000 rpm or more at extended stirring time (at least 30 min).

VIVAPUR[®] COS 5, 6 8 and CS 032 XV, CS TEX Easy

Proper activation requires deionized water and high shear force, e.g. a rotor-stator dissolver. Circumferential speed not less than 10 m/s is recommended. Please put the material into deionized water and stir for example with IKA Ultra Turrax T 25 at speed range 10000 – 20000 rpm for 3 min. Very important is that the material is first dispersed in deionized (or distilled) water before adding other ingredients.

1.) Disperse VIVAPUR[®] Grades with low shear forces in demineralized water. A concentration higher than 0.8 % (w/w) is recommended.

2.) Activate **VIVAPUR®** Grades by shearing it at higher shear forces using an Ultra Turrax (min. 10.000 rpm for at least 3 minutes). Lower shear forces and shorter activation time will result in a partial activation.





3.) **Optional step:** For optimal results let the suspension rest for at least 15 min to achieve an undisturbed gel formation.

4.) Add the remaining ingredients and homogenize. Gel formation begins right after the activation and reaches its climax within a few hours.

VIVAPUR® CS TEX Wet Wipe General Information

VIVAPUR® CS TEX Wet Wipe is a special grade dispersible cellulose developed for wet wipe applications. It has outstanding thixotropic properties even at high use levels. Compared to other dispersible cellulose products VIVAPUR® CS TEX Wet Wipe can be activated by lower shear forces. Furthermore VIVAPUR® CS TEX Wet Wipe enables a rapid gel formation right after shear, preventing phase separation or sedimentation throughout the entire production process and in the final product.

Basic preparation of suspensions with $\ensuremath{\text{VIVAPUR}}^{\otimes}\ensuremath{\text{CS}}$ TEX Wet Wipe

1.) Disperse **VIVAPUR® CS TEX Wet Wipe** with low shear forces in demineralized or tap water. A concentration higher than 0,3% (w/w) is recommended.

2.) Activate **VIVAPUR® CS TEX Wet Wipe** by increasing the shear forces using an Ultra Turrax (\geq 4.000 rpm, \geq 2 min). A full activation can also be achieved with the help of a dissolver (circumferential speed \geq 6 m/s, \geq 2 min). Lower shear forces and shorter activation time will result in a partial activation.

3.) **Optional step:** For optimal results and an undisturbed gel formation let the suspension rest for at least 15 min before adding other ingredients.

4.) Add the remaining ingredients and homogenize. Gel formation begins right after the activation and reaches its climax within a few hours.

VIVAPUR® CS TEX Sun General Information

VIVAPUR® CS TEX Sun is a special grade dispersible cellulose developed for sprayable sunscreens. It has excellent shear thinning properties even at high use levels. Compared to other dispersible cellulose products **VIVAPUR® CS TEX Sun** can be activated by lower shear forces.

Basic preparation of suspensions with VIVAPUR[®] CS TEX Sun

1.) Disperse VIVAPUR[®] CS TEX Sun with low shear forces in demineralized water. A concentration higher than 1% (w/w) is recommended.

2.) Activate **VIVAPUR® CS TEX Sun** by shearing it at higher shear forces using an Ultra Turrax (min. 4.000 rpm for at least 2 minutes). A full activation can also be achieved with the help of a dissolver (minimal circumferential speed 6 m/s for 2 minutes). Lower shear forces and shorter activation time will result in a partial activation.

3.) **Optional step:** For optimal results let the suspension rest for at least 15 min to achieve an undisturbed gel formation.

4.) Add the remaining ingredients and homogenize. Gel formation begins right after the activation and reaches its climax within a few hours.





NATURAL & BIODEGRADABLE INGREDIENTS

JRS – Global Manufacturer of Natural Ingredients

Family-owned company Established in 1878 More than 2500 employees Headquarters in Germany

SUNSCREEN

Global service and availability Local support in your language ISO 9001 certified Global seminars/trainings

High-Functional Ingredients by JRS

Highest quality and purity Tailor-made products Full product regulatory information Excellent price-performance ratio

Natural

Made from renewable resources Eco-friendly ECOCERT/COSMOS Skin-friendly



Readily biodegradable Safe and edible Non-GMO Vegan Halal & Kosher

J. RETTENMAIER & SÖHNE



www.jrspersonalcare.com

WORLDWIDE HEADQUARTERS

BU Home & Personal Care 73494 Rosenberg (Germany) personalcare@jrs.de