Technical Information

March 2008
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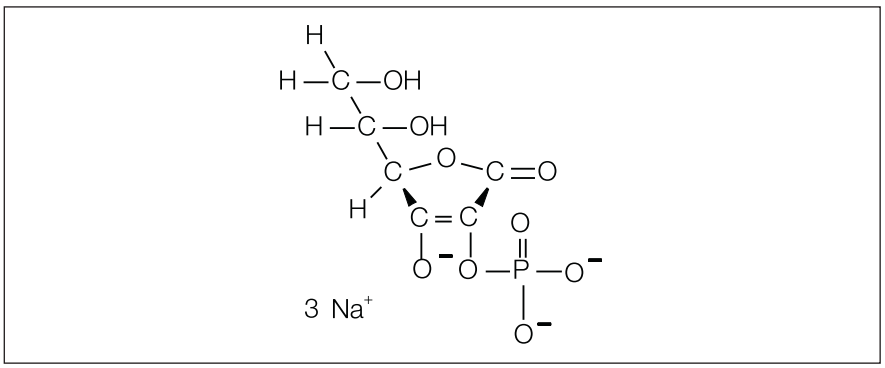
Sodium Ascorbyl Phosphate

® = Registered trademark of BASF in many countries.

Active ingredient for the cosmetics industry.
Acts as an in-vivo antioxidant, promotes collagen formation, lightens the skin.

BASF
We create chemistry

Structural formula



Synonym L-ascorbic acid-2-monophosphate, trisodium salt

Molecular formula $C_6H_6O_9Na_3P$

Molar mass 322.05 g/mol

INCI name Sodium Ascorbyl Phosphate

CAS-No. 66170-10-3

PRD-No. 30222192

Description Sodium Ascorbyl Phosphate is a stable vitamin C derivative. The product is a white to pale beige powder with practically no odor.

Specification See separate document: “Standard Specification (not for regulatory purposes)“ available via BASF’s WorldAccount: https://worldaccount.basf.com (registered access).

Application

Sodium Ascorbyl Phosphate is an active ingredient for sophisticated cosmetic skin-care products. It is a stable vitamin C derivative. It protects the skin, promotes its development and improves its appearance.
Sodium Ascorbyl Phosphate is cleaved enzymatically in the skin to release active vitamin C.
Sodium Ascorbyl Phosphate is therefore an effective antioxidant which protects the cells against damage caused by free radicals.
Sodium Ascorbyl Phosphate counteracts skin aging in promoting collagen formation.
Sodium Ascorbyl Phosphate also acts on the melanine formation process to prevent hyperpigmentation and senile keratosis. It therefore has skin lightening properties.
Because of its wide spectrum of action, Sodium Ascorbyl Phosphate is suitable for use in a wide range of skin care products.
As an effective watersoluble anti-oxidant which is stable in cosmetic formulation it is the perfect completion to Vitamin E Acetate, which is the common oil-soluble equivalent. The oilsoluble Vitamin E Acetate together with the water-soluble Sodium Ascorbyl Phosphate are the perfect anti-oxidant system in all skin-care formulations which are used against the daily environmental stress for the skin.
Other very important areas of use are sun protection formulations, antiwrinkle products, body lotions, day creams and night creams, and whitening products.

Recommended concentrations

	Sodium Ascorbyl Phosphate
Daily skin care	0.2 – 2%
Sun care products	0.2 – 1%
Lightening products	>3%

Solubility

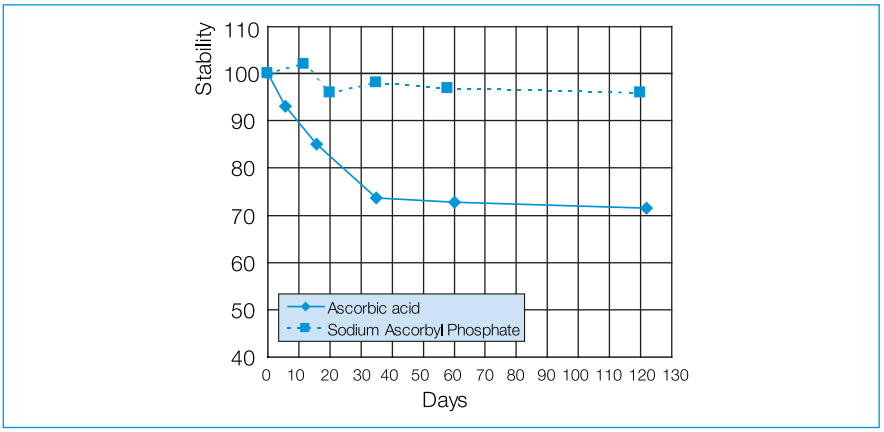
It is possible to prepare solutions of up to 64% in water, 13.2% in glycerol and 1.6% in propylene glycol with sodium ascorbyl phosphate. It is practically insoluble in ethanol, isopropyl myristate, cetostearyl octanoate, caprylic/capric triglyceride and C12-15 alkyl benzoate.

Stability/Storage

The product should be stored and transported in the original sealed containers, protected from light and moisture, at temperatures below 25 °C. Contact with metals should be avoided. The product is stable for at least 24 months if stored in the original sealed containers at 25 °C.

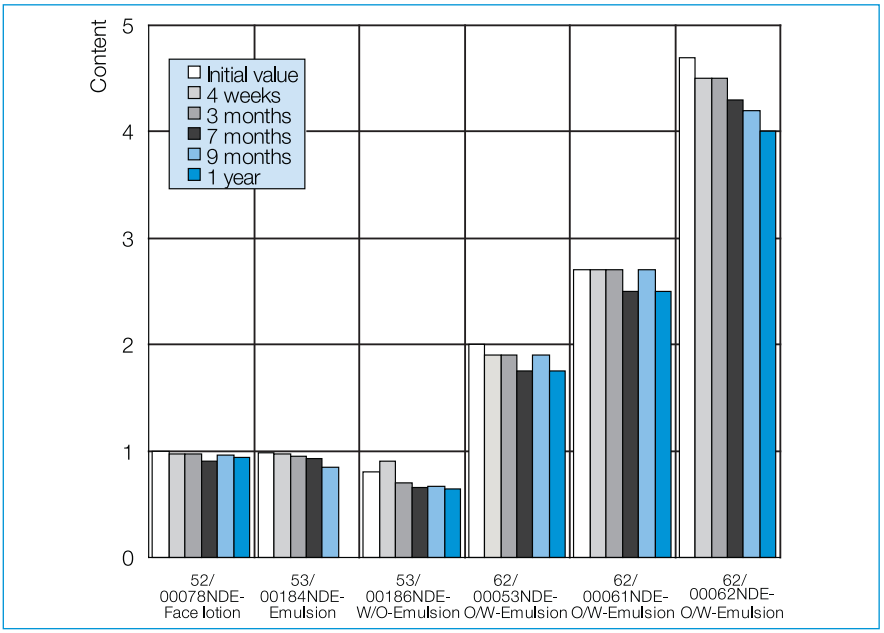
Stability in water and cosmetic formuations

Sodium Ascorbyl Phosphate is far more stable than Ascorbic Acid in water. Stability of Sodium Ascorbyl Phosphate and ascorbic acid in 3% solutions in water at 40 °C and pH 6:



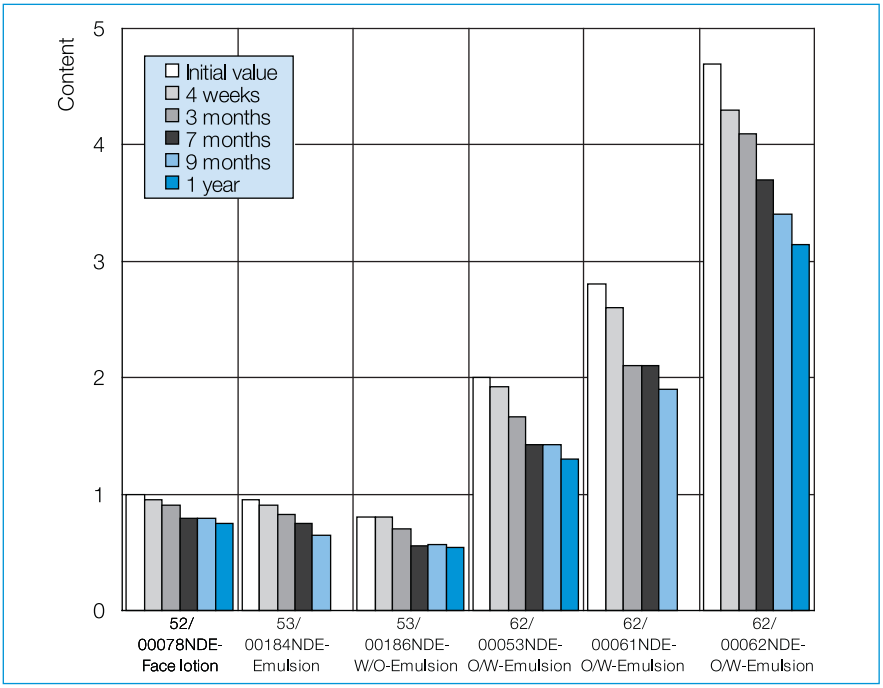
Sodium Ascorbyl Phosphate is stable in a wide range of formulations (see typical formulations).

Stability of Sodium Ascorbyl Phosphate in different formulations (see typical formulations) at 20 °C, pH 6.5:



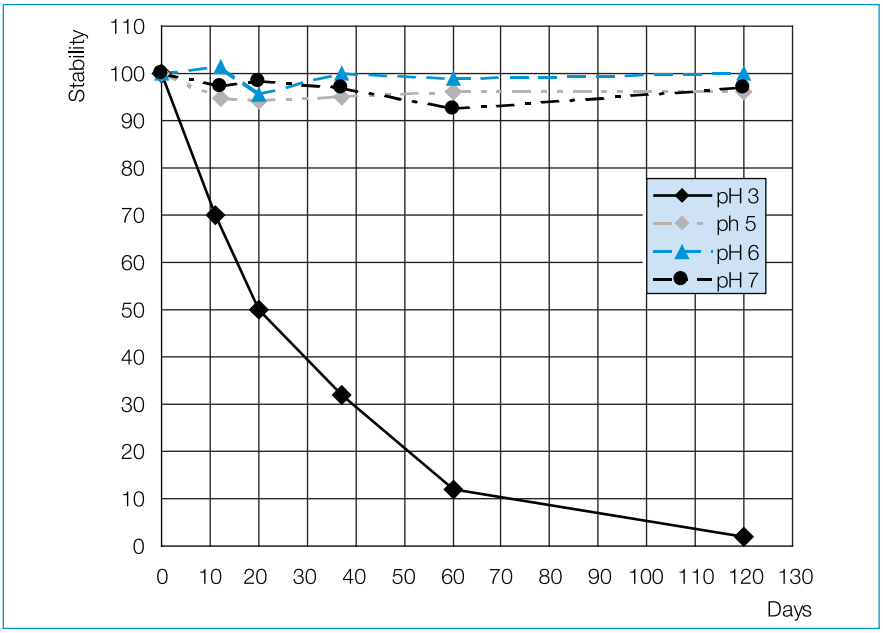
When the formulations were kept at 40 °C, they became discoloured after about 2 months, and assumed a pale beige color. Finished products should therefore be stored at temperatures below 25 °C.

Stability of Sodium Ascorbyl Phosphate in different formulations at 40 °C, pH 6.5:

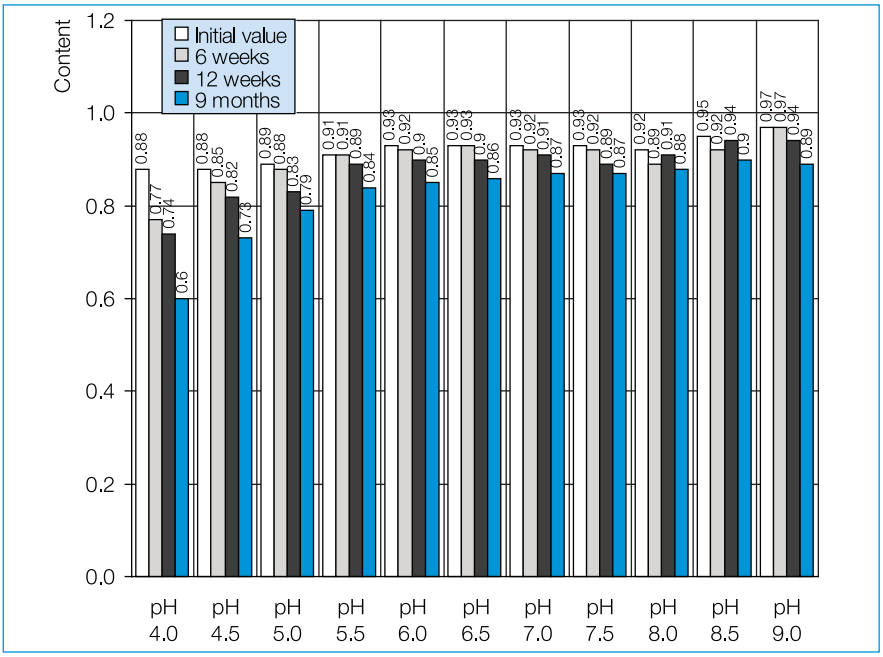


The stability of the product depends very much on the pH value of the formulation. The best stability is obtained at pH values above 6.5.

Stability of Sodium Ascorbyl Phosphate 3% in water at different pH values at 40 °C:



Stability of Sodium Ascorbyl Phosphate approx. 1% in formulation 62/00082NDE at different pH values at 20 °C:



Technical properties and handling

Sodium Ascorbyl Phosphate is a crystalline solid that is sensitive to heat, moisture, low pH values and heavy metals.
In the production of cosmetic care products, it is recommended to add Sodium Ascorbyl Phosphate to formulations at a low temperature (<40 °C).
It can be exposed to higher temperatures up to 80 °C, but only for a short time.
The product is most stable above pH 6.5. It is recommended to use a buffer system and to add a chelating agent.
Finished formulations should be stored at a temperature below 25 °C.

Safety Data Sheet

A Safety Data Sheet is available for Sodium Ascorbyl Phosphate. It contains the main results of the toxicological studies.

Antioxidant activity and Synergy with Vitamin E

Results of in-vitro study

Introduction
This study is able to show the synergistic action of Vitamin E and Vitamin C working together as anti-oxidants in the human skin.
Living human keratinocytes (HaCaT cells) were chosen as an in-vitro model. Due to the reduced stability of Tocopherol (Vitamin E) and Ascorbic Acid (Vitamin C) in cosmetic formulations pro-drugs are used, typically Vitamin E Acetate and Sodium Ascorbyl Phosphate, respectively. They were therefore used in this in-vitro cell test.
The HaCaT-cell system contains the esterases and phosphatases needed to convert the pro-drugs into the active form.
Sodium Ascorbyl Phosphate is water soluble and can be used as such in this aqueous cell system. Vitamin E Acetate is insoluble in water and has to be brought into solution with a vehicle. To keep the conditions as simple as possible, ethanol was used as vehicle. Vitamin E Acetate was dissolved in 0.1% ethanol. A control experiment ensured that the vehicle (0.1% ethanol solution in water) has no disturbing effect.
Due to different kinetics of the cleavage of the prodrug into the active form, the optimum reaction time had to be determined empirically in preliminary experiments. It could be shown that a reaction time of 48 hrs. for Sodium Ascorbyl Phosphate and 7 days for Vitamin E Acetate are the ideal conditions. (The compounds are stable in water during this time.) If a combination was tested, Vitamin E Acetate supplementation started 5 days before adding Sodium Ascorbyl Phosphate.

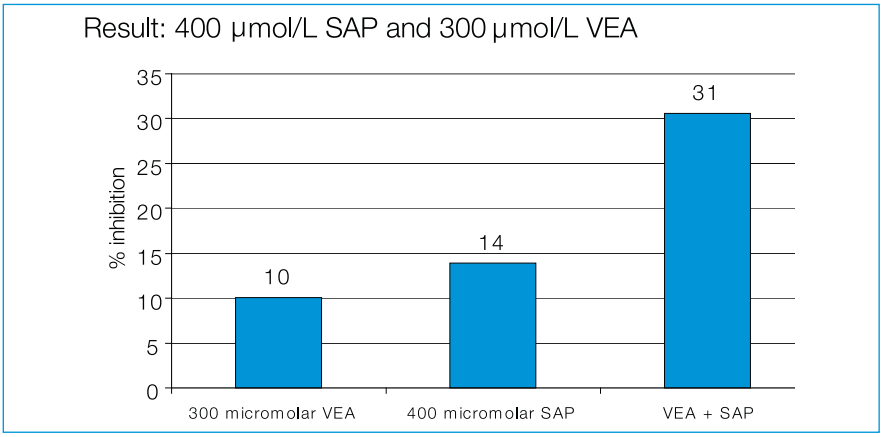
Results

Human keratinocytes (HaCaT-cells) were supplemented with Vitamin E Acetate (VEA) diss. In 0.1% ethanol for seven days and/or Sodium Ascorbyl Phosphate (SAP) for 48 hrs. The following concentrations were tested alone and in combination with the other active ingredient.

VEA: 3, 10, 30, 100, 300 micromolar

SAP: 50, 100, 200, 400 micromolar

The anti-oxidant effect was determined in measuring the ability to inhibit hydrogen-peroxide induced oxidation. The cells were incubated with the fluorescence label DCFH. The oxidative stress was induced with 200 micromolar hydrogen peroxide. (These a very harsh conditions.) The capability of VEA and SAP to inhibit oxidation was measured in determing the resulting fluorescence.

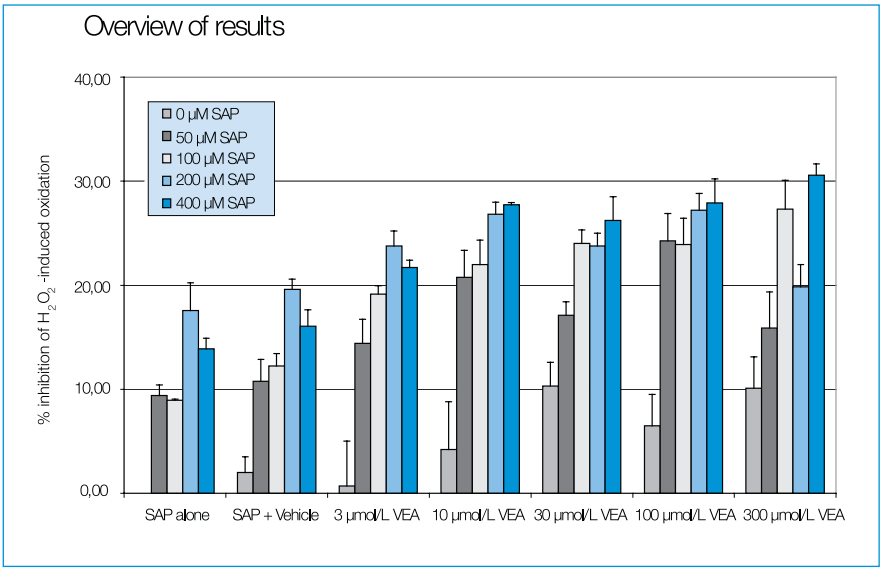


The chart above shows an example with both SAP and VEA at high concentrations. With VEA alone in a concentration of 300 micromolar the inhibition of oxidation is 10%. With SAP alone in a concentration of 400 micromolar the inhibition of oxidation is 14%.

If VEA and SAP are used together in the above mentioned concentration, the inhibition of oxidation is over 30%. This is a synergistic effect, because the theoretical addition of the two ingredients results only 24%.

The effect is much higher than with the single compounds alone and even higher than the theoretical addition.

The following chart shows all the results together.



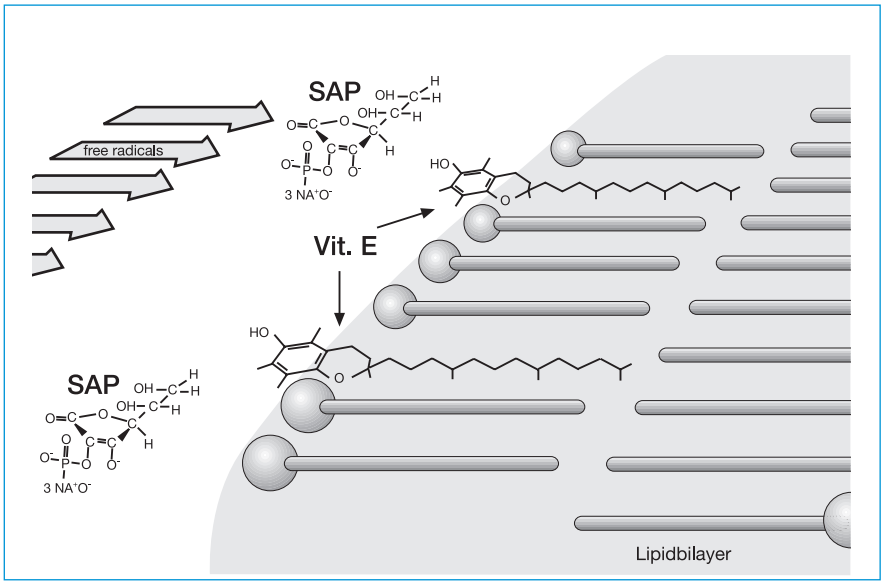
First column is SAP alone at different concentrations. The effect is dose dependant, because it increases with the concentration. However, a saturation occurs. From a certain concentration level on, an increase in concentration does not lead to a higher effect. The fact, that 200 µmol/L gives the highest effect with 18% while the concentration of 400 µmol/L is a bit lower should not be overrated. This will be due to margin of error.

The second column is the control experiment. The cells are in an aqueous environment. SAP is soluble in water, so not a problem. Vitamin E Acetate (VEA) is oil-soluble, so it has to be brought into solution with a vehicle. This vehicle is 0.1% Ethanol, so a simple dispersion. The results shown in this column are the same as in the first column without the vehicle (within margin of error). Therefore the vehicle does not have an effect. The results for VEA in this test-system are trustworthy.
The columns 3 – 7 show the results with VEA alone and the results of the experiments with the combination of VEA and SAP.
The results of VEA alone are the blue ones, always the first column in one group. The concentration increases to the right. The effect is similar to the one of SAP, however lower in value. Increase of concentration leads to a higher effect and again there is a saturation effect. At a certain point an increase of concentration does not lead to a higher effect. Maximum effect is 10% inhibition.
All the other columns represent combinations of SAP and VEA. It becomes clearly visible that much higher effects can be obtained if a combination of SAP and VEA is used compared to the values where only one ingredient is used.

Summary of in-vitro study and conclusions
The maximum inhibition of hydrogen peroxide-induced oxidation with Sodium Ascorbyl Phosphate (SAP) and Vitamin E Acetate (VEA) alone are 18% and 10%, respectively.

Higher values of inhibition can be obtained only if a combination of SAP and VEA is used.

Due to their different solubilities SAP protects the aqueous cytosol part of the system, while VEA is incorporated into the oil-soluble cell-membranes. The synergistic effect of SAP and VEA is therefore due to the fact that only a combination of a water-soluble with a fatsoluble anti-oxidant offers integral protection.

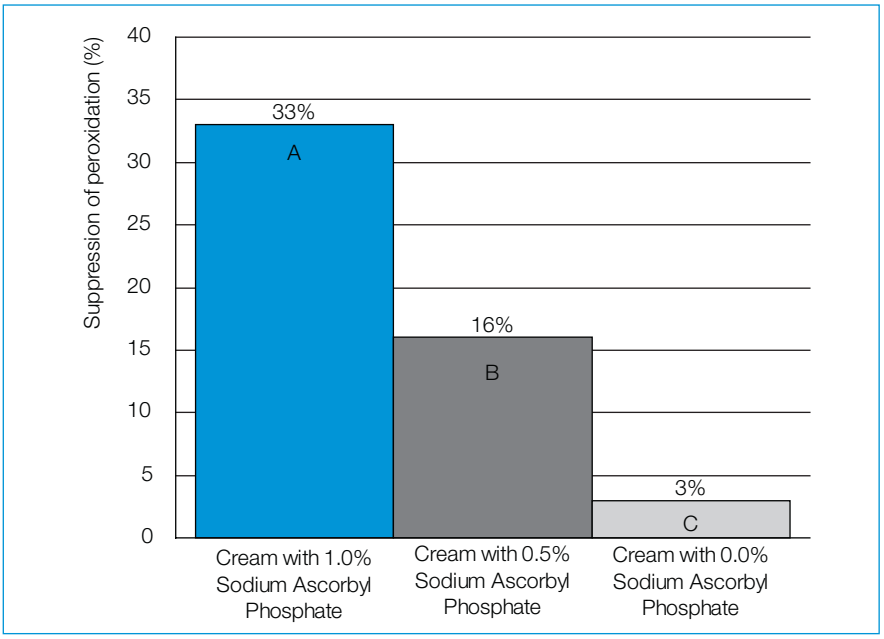


Further efficacy studies

The penetration of ascorbyl phosphates into the skin and their cleavage to release vitamin C have been demonstrated in studies by Sakamoto (T. Sakamoto, M. Egawa, M. Tanaka, 19th IFSCC Congress, 2, 5-17 (1996)) and Takashima (H. Takashima, H. Nomura, Y. Imai, H. Mima, Amer. Perfumer a. Cosmetics, 86, 29-36 (1971).
The action of vitamin C phosphate in promoting collagen formation has been demonstrated in an in-vitro study by Hata (R-I. Hata, H. Senoo, J. Cell. Physiol. 138, 8-16 (1989)).
Vitamin C phosphate is capable of supressing the formation of melanine. Sakamoto has demonstrated this in-vitro on melanocyte cultures. He found that melanine production was reduced by 80%. A study by Majmudar (G. Majmudar, G. Jacob, Y. Laboy, L. Fisher, J. Cosmet. Sci., 49, 361-367 (1998)) demonstrates the skin lightening effect of ascorbyl phosphate in another in-vitro model that used human epidermis. A reduction of tyrosinase activity by 35% was demonstrated.

The antioxidant effect of ascorbyl phosphates in protecting the skin against UV damage has also been demonstrated in a number of studies, e.g. by Kobayashi (S. Kobayashi, M. Takehana, S. Itoh; Photochem. Photobiol. 64, 224-228 (1996)). A reduction in lipid peroxidation and an anti-inflammatory effect have been demonstrated in hairless mice after treatment with ascorbyl phosphates.
A study conducted by BASF on 20 test persons shows that a formulation containing 1% Sodium Acorbyl Phosphate applied to the skin can reduce UV-induced lipid peroxidation by 30%.

Suppression of lipid peroxidation by topically applied Sodium Ascorbyl Phosphate compared with an untreated area of skin, in 20 test persons:



The efficacy of a combination of Sodium Ascorbyl Phosphate and a nucleophile as nitrosamine blockers for cosmetic formulations that contain secondary amines and potential nitrosation reagents has been demonstrated by Guthrie (W. Guthrie, Safety First, Soap Perfumery and Cosmetics, 17(2), 43-46 (1998)).

Typical formulations

Face lotion with Sodium Ascorbyl Phosphate **No. 52/00077**

	%	Ingredients	Supplier	INCI name
A	1.50	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	50.00	Water dem.		Aqua
	q.s.	Perfume		
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Bisabolol nat.	(1)	Bisabolol
	15.00	Ethanol 96%		Alcohol
	2.00	Witch Hazel Distillate	(212)	Witch Hazel (Hamamelis Virginiana) Distillate
	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	28.20	Water dem.		Aqua

Production: Solubilize the components of phase A. Dissolve phase B and stir it into phase A. Adjust the pH value to about 5 – 6.

Body lotion with SAP **No. 62/00056**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	6.00	Grape seed oil		Grape (Vitis Vinifera) Seed Oil
	3.00	Imwitor 960 K	(11)	Glyceryl Stearate SE
	1.50	Lanette O	(27)	Cetearyl Alcohol
	0.50	Abil 350	(44)	Dimethicone
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	2.00	Glycerin 87%	(20)	Glycerin
	1.00	D-Panthenol USP	(1)	Panthenol
	q.s.	Preservative		
	65.30	Water, dem.		Aqua
C	8.00	Luvitol® EHO	(1)	Cetearyl Ethyhexanoate
	0.30	Carbopol 940	(6)	Carbomer
D	0.30	Triethanolamine Care	(1)	Triethanolamine
E	3.00	Aloe vera lipo-quinone extract	(51)	Aloe Barbadenis Extract
	2.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	0.10	DL-alpha-Tocopherol	(1)	Tocopherol
	q.s.	Perfume		

Production: Heat phases A and B separately to approx. 80 °C.

Stir phase B into phase A and homogenize thoroughly. Stir in phase C, neutralize with phase D and homogenize. Cool to approx. 40 °C, add phase E and homogenize again.

Properties: Viscosity: approx. 1,900 mPa·s Haake Viskoster VT-02
pH value: approx. 7.9

Day cream **No. 62/00065**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	4.00	Lanette O	(27)	Cetearyl Alcohol
	10.00	Luvitol® EHO	(1)	Cetearyl Ethyhexanoate
	3.00	Cutina Gms	(44)	Glyceryl Stearate
	5.00	Vaseline		Petrolatum
B	0.20	Edeta® BD	(1)	Disodium EDTA
	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	68.30	Water, dem.		Aqua
C	0.50	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	q.s.	Perfume		

Production: Heat phases A and B separately to approx. 80 °C. Stir phase B into phase A and homogenize thoroughly. Cool to approx. 40 °C, add phase C and homogenize again.

Properties: Viscosity: approx. 20,000 mPa·s Haake Viskoster VT-02
pH value: approx. 7.0

Rich vitamin night cream **No. 62/00082**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	3.00	Amerchol L 101	(3)	Mineral Oil, Lanolin Alcohol
	6.00	Isopropyl myristate	(27)	Isopropyl Myristate
	2.00	Dow Corning 345 Fluid	(16)	Cyclopentasiloxane, Cyclohexasiloxane
	2.00	Elfacos C 26	(2)	Hydroxyoctacosanyl Hydroxystearate
	2.00	Elfacos ST 9	(2)	PEG-45/Dodecyl Glycol Copolymer
	5.00	Jojoba Oil		Jojoba (Buxus Chinesis) Oil
	0.10	Ascorbyl palmitate		Ascorbyl Palmitate
B	5.00	Glycerin 87%	(20)	Glycerin
	0.20	Edeta® BD	(1)	Disodium EDTA
	0.10	Citric acid	(20)	Citric Acid
	q.s.	Preservative		
	55.60	Water, dem.		Aqua
C	5.00	Water, dem.		Aqua
	1.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
D	2.00	DL-alpha-Tocopherol	(1)	Tocopherol
	5.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to approx. 80 °C.

Stir phase B into phase A and briefliy homogenize.

Cool to approx. 40 °C with stirring, add phases C and D and homogenize again.

Properties: Viscosity: approx. 5,300 mPa·s Brookfield RVD VII+

Face lotion with SAP **No. 52/00078**

%	Ingredients	Supplier	INCI name
q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
q.s.	Perfume		
3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
0.10	Bisabolol nat.	(1)	Bisabolol
15.00	Ethanol 96%		Alcohol
2.00	Hamamelis dest.	(6)	Witch Hazel (Hamamelis Virginiana) Distillate
1.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
78.90	Water, dem.		Aqua

Procedure: Weigh out the components and dissolve them clearly. Adjust the pH value to 5 – 6

Hand cream with ACE **No. 62/00095**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	10.00	Paraffin Oil		Mineral Oil
	3.00	Vaseline		Petrolatum
	5.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
	2.00	Elfacos ST 9	(2)	PEG-45/Dodecyl Glycol Copolymer
	5.00	Jojoba Oil		Jojoba (Buxus Chinensis) Oil
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	62.40	Water dem.		Aqua
C	2.00	Retinol 10 S	(1)	Glycine Soja (Soybean) Oil, Retinol
	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	0.20	Vitamin E Acetate	(1)	Tocopheryl Acetate
	0.10	BHT	(20)	BHT
	q.s.	Perfume		

Production: Heat phases A and B separately to about 85 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phase C and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 20,000 mPa·s Brookfield RVD VII+

Body lotion with Sodium Ascorbyl Phosphate, „Healthy & Young“, Type O/W **No. 62/00069**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	6.00	Grape Seed Oil		Grape (Vitis Vinifera) Seed Oil
	3.00	Imwitor 960 K	(11)	Glyceryl Stearate SE
	2.00	Lanette O	(27)	Cetearyl Alcohol
	0.50	Abil 350	(44)	Dimethicone
	0.15	Oxynex 2005	(20)	BHT, Ascorbyl Palmitate, Citric Acid, Glyceryl Stearate, Propylene Glycol
B	2.00	Glycerin 87%	(20)	Glycerin
	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.20	Edeta® BD	(1)	Disodium EDTA
	1.00	D-Panthenol USP	(1)	Panthenol
	q.s.	Preservative		
	65.55	Water dem.		Aqua
C	0.30	Carbopol 940	(6)	Carbomer
	8.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
D	0.30	Triethanolamine Care	(1)	Triethanolamine
E	1.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	3.00	Aloe Vera Lipo-Quinone Extract	(51)	Aloe Barbadensis Extract
	q.s.	Perfume		

Production:

Heat phases A and B separately to about 80 °C. Stir phase B into phase A whilst homogenizing and continue homogenizing for a while.

Mix phase C, stir it into phase A + B, neutralize with phase D and homogenize again.

Cool to about 40 °C, add phase E and homogenize again.

Properties:

Viscosity: 5,000 mPa·s Brookfield RVD VII+
pH value: 7.0

Vitamin rich body lotion **No. 62/00091**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 25	(1)	Ceteareth-25
	2.00	Cremophor A 6	(1)	Ceteareth-6, Stearyl Alcohol
	0.10	Phytantriol		Phytantriol
	8.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	6.00	Grape Seed Oil		Grape (Vitis Vinifera) Seed Oil
	3.00	Imwitor 960 K	(11)	Glyceryl Stearate SE
	2.00	Lanette O	(27)	Cetearyl Alcohol
	0.50	Abil 350	(44)	Dimethicone
	0.15	Oxynex 2004	(20)	BHT, Ascorbyl Palmitate, Citric Acid, Glyceryl Stearate, Propylene Glycol
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	1.00	D-Panthenol USP	(1)	Panthenol
	0.20	Edeta® BD	(1)	Disodium EDTA
	2.00	Glycerin 85%	(20)	Glycerin
	q.s.	Preservative		
	63.35	Water dem.		Aqua
	0.30	Carbopol 940 Polymer	(6)	Carbomer
C	0.30	Triethanolamine Care	(1)	Triethanolamine
D	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	5.00	Water dem.		Aqua
	0.50	Thermoplex	(23)	Soluble Collagen, Glycerin
E	0.40	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production:

Heat phases A and B separately to about 80 °C.
Stir phase B into phase A whilst homogenize and continue homogenizing for a while.
Stir in phase C and rehomogenize.
Cool to about 40 °C, add phases D and E and homogenize again.

Properties:

Viscosity: 11,000 mPa·s Brookfield RVD VII+
pH value: 6.5

Lotion with 3% Sodium Ascorbyl Phoshate **No. 51/00053**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	5.00	Isopropyl Myristate	(27)	Isopropyl Myristate
	5.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	2.00	TeCero Wax 1030 K	(73)	Microcrystalline Wax
	0.50	Bees Wax 3044 PH	(73)	Bees Wax
	0.50	Cetiol SB 45	(27)	Butyrospermum Parkii (Shea Butter)
	2.00	Jojoba Oil		Jojoba (Buxus Chinensis) Oil
	10.00	Paraffin Oil		Mineral Oil
B	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	51.00	Water dem.		Aqua
C	3.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	10.00	Water dem.		Aqua
D	q.s.	Perfume		

Production: Heat phases A and B separately to about 85 °C. Stir phase B into phase A whilst homogenizing and continue homogenizing for a while.

Cool to about 40 °C, add phases C and D and homogenize again.

Properties: Viscosity: 6,500 mPa·s Brookfield RVD VII+

Retinol cream **No. 62/00077**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	4.00	Lanette O	(27)	Cetearyl Alcohol
	10.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	3.00	Cutina GMS	(44)	Glyceryl Stearate
	5.00	Vaseline		Petrolatum
B	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.20	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	67.30	Water dem.		Aqua
C	0.50	Retinol 10 S	(1)	Glycine, Soja (Soybean) Oil, Retinol
	1.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phase C and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 20,000 mPa·s Brookfield RVD VII+
pH value: 7.4

Night care cream with ACE **No. 62/00098**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	4.00	Lanette O	(27)	Cetearyl Alcohol
	10.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	3.00	Cutina GMS V	(27)	Glyceryl Stearate
	5.00	Vaseline		Petrolatum
B	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	67.40	Water dem.		Aqua
C	0.50	Retinol 10 S	(1)	Glycine, Soja (Soybean) Oil, Retinol
	0.50	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	0.50	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phase C and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 11,000 mPa·s Brookfield RVD VII+
pH value: 7.8

Enriched night care cream with Retinol **No. 62/00059**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	10.00	Paraffin Oil		Mineral Oil
	3.00	Vaseline		Petrolatum
	5.00	Miglyol 812	(11)	Caprylic/Capric Trigylyceride
	2.00	Elfacos ST 9	(2)	PEG-45/Dodecyl Glycol Copolymer
	5.00	Jojoba Oil		Jojoba (Buxus Chinensis) Oil
	1.00	Claytone XL	(148)	Quaternium-18 Bentonite
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	58.90	Water dem.		Aqua
C	5.00	Water dem.		Aqua
	0.50	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
D	0.50	Retinol 10 S	(1)	Glycine, Soja (Soybean) Oil, Retinol
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80 °C. Stir phase B into phase A whilst homogenizing. Cool to about 40 °C, add phases C and D and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 11,000 mPa·s Haake Viscotester VT-02

Retinol night care cream **No. 62/00090**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	10.00	Paraffin Oil		Mineral Oil
	3.00	Vaseline		Petrolatum
	5.00	Miglyol 812	(11)	Caprylic/Capric Trigylyceride
	5.00	Jojoba Oil		Simmondsia Chinensis (Jojoba) Seed Oil
	2.00	Elfacos ST 9	(2)	PEG-45/Dodecyl Glycol Copolymer
	1.00	Claytone XL	(148)	Quaternium-18 Bentonite
	0.10	BHT	(20)	BHT
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	59.00	Water dem.		Aqua
C	5.00	Water dem.		Aqua
	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
D	0.50	Retinol 10 S	(1)	Glycine, Soja (Soybean) Oil, Retinol
	0.10	Vitamine E-Acetate Care	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phases C and D and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 10,000 mPa·s Brookfield RVD VII+

Day care cream with ACE **No. 62/00096**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor A 25	(1)	Ceteareth-25
	4.00	Lanette O	(27)	Cetearyl Alcohol
	10.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	3.00	Cutina GMS V	(27)	Glyceryl Stearate
	5.00	Vaseline		Petrolatum
B	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	68.10	Water dem.		Aqua
C	0.50	Retinol 10 S	(1)	Glycine Soja (Soybean) Oil, Retinol
	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	0.10	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to about 80 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phase C and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 15,400 mPa·s Brookfield RVD VII+
pH value: 7.4

Face mask with Retinol **No. 62/00093**

	%	Ingredients	Supplier	INCI name
A	2.00	Cremophor® A 25	(1)	Ceteareth-25
	2.00	Cremophor A 6	(1)	Ceteareth-6, Stearyl Alcohol
	6.00	Cutina GMS	(27)	Glyceryl Stearate
	1.00	Lanette 16	(27)	Cetyl Alcohol
	4.00	Lanette O	(27)	Cetearyl Alcohol
	5.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
B	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	3.00	D-Panthenol USP	(1)	Panthenol
	6.00	Bolus Alba	(20)	Kaolin
	q.s.	Preservative		
	57.70	Water dem.		Aqua
C	1.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	0.10	BHT	(20)	BHT
	0.10	Retinol 50 C	(1)	Retinol, Polysorbate 20
	1.00	Bisabolol rac.	(1)	Bisabolol
	q.s.	Perfume		
D	5.00	Extrapon Hamamelis	(212)	Water, Ethoxydiglykol, Propylene Glycol, Glucose, Butylene Glycol, Witch Hazel Extract
	1.00	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate

Production: Heat phases A and B separately to about 85 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phases C and D whilst homogenizing, then cool to room temperature whilst stirring.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 39,000 mPa·s Brookfield RVD VII+
pH value: 7.0

Day care cream with ACE **No. 62/00094**

	%	Ingredients	Supplier	INCI name
A	6.00	Cremophor® WO 7	(1)	PEG-7 Hydrogenated Castor Oil
	10.00	Paraffin Oil		Mineral Oil
	3.00	Vaseline		Petrolactum
	5.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
	2.00	Elfacos ST 9	(2)	PEG-45/Dodecyl Glycol Copolymer
	5.00	Jojoba Oil		Jojoba (Buxux Chinensis) Oil
	1.00	Claytone XL	(148)	Quaternium-18 Bentonite
B	3.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	0.10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Preservative		
	64.00	Water dem.		Aqua
C	0.50	Retinol 10 S	(1)	Glycine Soja (Soybean) Oil, Retinol
	0.10	BHT	(20)	BHT
	0.20	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	0.10	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		

Production: Heat phases A and B separately to about 85 °C. Stir phase B into phase A and homogenize. Cool to about 40 °C, add phase C and homogenize again.

Recommendation: Do the production of the emulsion and the filling into appropriate containers in the absence of oxygen.

Properties: Viscosity: 24,100 mPa·s Brookfield RVD VII+

Shampoo with vitamins **No. 08/00596**

	%	Ingredients	Supplier	INCI name
A	10.00	Rewopol SB FA 30 B	(44)	Disodium Laureth Sulfosuccinate
	10.00	Tego Betain L 7	(44)	Cocamidopropyl Betaine
	40.00	Texapon NSO	(27)	Sodium Laureth Sulfate
	0.50	Vitamin E Acetate	(1)	Tocopheryl Acetate
	0.20	Phytantriol		Phytantriol
	q.s.	Perfume		
	2.00	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
B	30.30	Water dem.		Aqua
	0.50	Sodium Ascorbyl Phosphate	(1)	Sodium Ascorbyl Phosphate
	3.00	Sodium Chloride	(20)	Sodium Chloride
	1.00	D-Panthenol USP	(1)	Panthenol
	2.50	Luviquat® FC 550	(1)	Polyquaternium-16

Production: Weigh out the components of phase A and mix them. Add the components of phase B one after another and mix until a homogeneous solution is obtained Set pH value with citric acid as desired.

Properties: Viscosity: 2,900 mPa·s Brookfield RVD VII+
pH value: 6.1

Suppliers

1. **BASF SE**
67056 Ludwigshafen, Germany
Tel.: +49(621) 60-0
Fax: +49(621) 60-42525
www.basf.com

2. **Akzo Nobel Chemicals bv**
Stationsplein 4, 3818 LE Amersfoort, Netherlands
Tel.: +31-33-4076767
Fax: +31-33-4676159
www.akzonobel.com

3. **Amerchol Corporation**
136 Talmadge Road, NJ 08818 Edison, USA
Tel.: +1(908) 248-6000
Fax: +1(908) 287-4186
www.amerchol.com

6. **The Lubrizol Corporation**
29400 Lakeland Boulevard, Wickliffe, Ohio 44092, USA
Tel.: +1(440) 943 4200
www.lubrizol.com

11. **Sasol Germany GmbH – Witten**
Arthur-Imhausen-Str. 92, 58453 Witten/Ruhr, Germany
Tel.: +49(2302) 925-537
Fax: +49(2302) 925-358
www.sasol.com

16. **Dow Corning Corporation**
2200 West Salzburg Road, MI 48686 Midland, USA
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+1(800) 248-2481
Fax: +1(517) 496-6974
www.dow.com

20. **Merck KGaA**
Frankfurter Straße 250, 64293 Darmstadt, Germany
Tel.: +49(6151) 72-7869
Fax: +49(6151) 72-8333
www.merck.com

23. **GfN Herstellung von Naturextrakten GmbH**
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Tel.: +49(6207) 7007
Fax: +49(6207) 1276

27. **BASF**
Personal Care and Nutrition GmbH
Rheinpromenade 1, 40789 Monheim, Germany
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www.basf.com

44. **Evonik Goldschmidt GmbH**
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www.evonik.com

51. **Hans Rahn GmbH**
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73. **Tromm GmbH, Wachs- und Ceresin-Fabriken**
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148. **Southern Clay Products, Inc.**
1212 Church Street, TX 78629 Gonzales, USA
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212. **Symrise GmbH & Co. KG**
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Note

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