



# *THE NATURAL HAIR STYLING SECRET*

GREEN CONCEPTS with NATURAL INGREDIENTS

“Reformulation or creation of styling products, from Mousses, through to gels and sprays with AGRANA’s natural range of styling and functional starches, is a big step forward for the natural cosmetics industry”



Become part of the

## NATURAL HAIR STYLING SECRET.



Current hair styling market benchmarks often use synthetic polymers such as Acrylic polymers, PVP or VP/VA-co-polymer in hair care applications.

**AGRANA's all natural or naturally derived alternatives** shows that you do not have to compromise with performance when switching from synthetic to natural. The perfect combination of ingenious starches offering different functionalities results in improved foam volume, superior curl retention and stiffness. Moreover longevity cleansing benefits through an enhanced absorption of oils and sebum may be achieved.

The unique and functional starch portfolio from Agrana gives you the solution to formulate all your styling products.

Let AGRANA share the secret to natural hair styling with the following innovative styling solutions.

Overview portfolio

## AGRANA's STARCHES as a key to the STYLING SECRET.

	PRODUCT	INCI	FORM	THE BIG GREEN PLUS	NATURALITY
STYLING	AGENABON 20.219	<i>Hydrolyzed Corn Starch</i>	Cold water soluble	• Natural hold and curl retention, no perceived after hair feel	COSMOS
	AGENANOVA 30.326	<i>Maltodextrin</i>	Cold water soluble	• Strong styling effect, perceivable film on the hair shaft	COSMOS
	MAIZE-STYLE ORGANIC	<i>Hydrolyzed Corn Starch</i>	Cold water soluble	• Strong natural styling durability for various hold levels	COSMOS ORGANIC
THICKENER	AGENAJEL 20.306	<i>Distarch Phosphate</i>	Cold water swellable	• Foam structure and stability providing a dense, tight, creamy, fine texture	COSMOS
	POTATO-JEL NATURAL	<i>Distarch Phosphate</i>	Cold water swellable	• Allows the formulation of natural, synthetic-free and viscosity-stable hair gels	COSMOS
	AGENAJEL CLEAR	<i>Hydroxypropyl Starch Phosphate</i>	Cold water swellable	• Allows the formulation of naturally derived and viscosity-stable hairgels	Naturally derived
ABSORBENT	RICE PO <sub>4</sub> NATURAL	<i>Distarch Phosphate</i>	Particulate starch	• Enhanced absorption of oils and sebum ("dry shampoo effect"), longevity cleansed effect between application	COSMOS

All listed starch based products are readily biodegradable (Method: OECD 301F).

An overview of

## APPLICATIONS & COMPATIBILITY of NATURAL & NATURALLY DERIVED STARCH BASED PRODUCTS.

	AGENABON 20.219	AGENANOVA 30.326	MAIZE-STYLE ORGANIC	AGENAJEL 20.306	AGENAJEL CLEAR	POTATO-JEL NATURAL	RICE PO <sub>4</sub> NATURAL
STYLING MOUSSE AEROSOL BASED	+++	+++	+	+++	+	+	+++
PUMP FOAM MOUSSE AQUEOUS	+++	+++	+++	+	+	+	+
PUMP FOAM MOUSSE STRONG HOLD	++	+++	+++	+	+	+	+
PUMP FOAM MOUSSE WITH ETHANOL	+++	+++	+	+	+	+	+
STYLING GEL	+++	+++	+++	+	+++	++	+
STYLING CREAM	+++	+++	+++	++	+++	+	+++
STYLING WAX	+++	+++	+++	++	+++	+	+++
BEARD GEL	+++	++	+	+	+++	++	++

**Our wide range of styling polymers** allows you to adjust the degree of styling to your exact needs.

By combining the different AGRANA products you can achieve a styling product with light to strong hold, with varying levels of stiffness.

There are many combinations possible using the AGRANA styling portfolio, allowing a variety of bases.

+++ High performance  
 ++ Moderate performance  
 + Not recommended

All natural polymers

## STYLING STARCHES for CURL RETENTION.

Starches allow for the formulation of natural but effective styling products, with varying degrees of hold. This variation of hold from natural to strong is easily achieved by adjusting the use level of the styling starch as well as the combination used, as they are effective alone or when used in combinations. The Agrana styling starches are suitable for use with all raw materials commonly used in hair styling formulations and no have no known incompatibilities.

PRODUCT	VISCOSITY at 15 % i.s.	APPEARANCE	ETHANOL COMPATIBILITY
AGENABON 20.219	5 mPa·s	Clear	High
AGENANOVA 30.326	10 mPa·s	Almost clear	Medium
MAIZE-STYLE ORGANIC	250 mPa·s	Slightly hazy	Low



A look into

## CHARACTERISTICS of our STYLING AGENTS.

- GMO-free
- 100% of natural origin according to ISO 16128
- Fine, white to off-white powders with neutral to specific odour, free flowing and slightly hygroscopic, and dissolves readily in water



### AGENABON 20.219 (INCI: Hydrolyzed Corn Starch)

Leads to a light to medium hold with a pleasant hair feel without increasing viscosity. It shows the best alcohol compatibility, is easily dissolved and allows clear formulations. Suggested use level is 5 to 20% (in liquid).



### AGENANOVA 30.326 (INCI: Maltodextrin)

This film former allows the production of clear styling products with medium to high hold. It has very low impact on the viscosity and shows good alcohol compatibility. Suggested use level is 5 to 15% (in liquid).



### MAIZE-STYLE ORGANIC (INCI: Hydrolyzed Corn Starch)

This natural styling polymer provides perfect results in water-based styling products, such as hair mousses, gels and creams when high hold is desired. It has excellent film-forming properties and provides long-lasting hold. Suggested use level is 2 to 8% (in liquid).

The amazing

## PROPERTIES of our STYLING AGENTS.

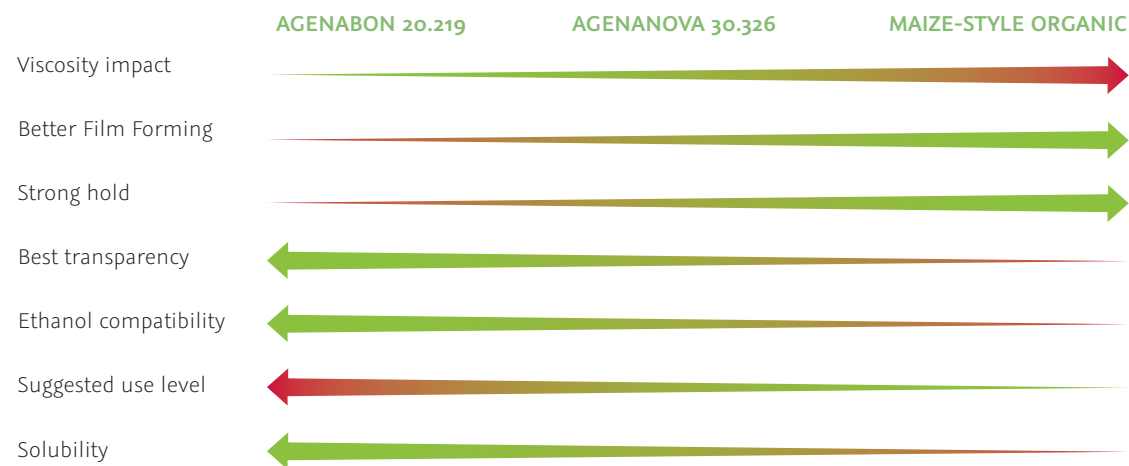
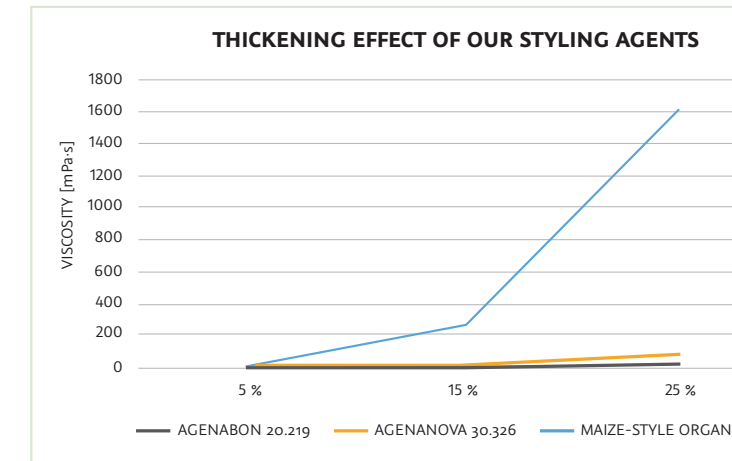


Fig. 1. Influence of various starches on formulation parameters

A look into

## VISCOSITY PROFILES of our STYLING AGENTS.



### Procedure of Measurement:

Add Styling Polymer into hot water whilst stirring. Stir for 10 min at 1000 rpm with turbine stirrer. Cool down to room temperature and measure viscosity with Brookfield at 100 rpm.



A look into

## TRANSPARENCY & FILM FORMING of our STYLING AGENTS.

The use of MAIZE-STYLE ORGANIC can be used alone to obtain excellent styling properties. However by combining the different styling starches, you can achieve varying styling attributes ranging from natural to strong hold.

The transparency achievable with COSMOS approved styling starches is comparable to synthetic film formers.

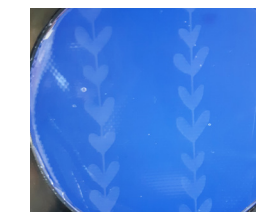


Fig. 2. Film with 100% MAIZE-STYLE ORGANIC

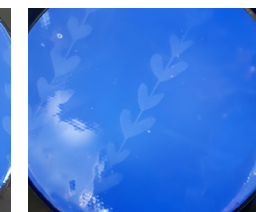


Fig. 3. Film with 50% MAIZE-STYLE ORGANIC & 50% AGENABON 20.219



Fig. 4. Film with 50% MAIZE-STYLE ORGANIC & 50% AGENANOVA 30.326

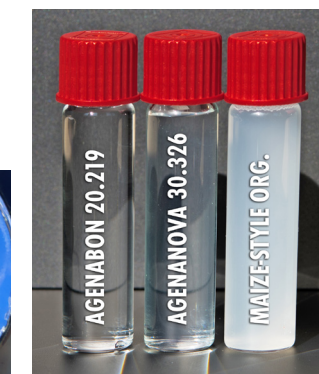


Fig. 5. 5% solution of our styling agents

A look into

## CHARACTERISTICS of THICKENING STARCHES.

**AGENAJEL CLEAR:** the excellent transparency, in comparison to other starch thickeners, and its high thickening efficiency makes it particularly suitable for the formulation of high transparent hair gels, based on 100% readily biodegradable ingredients.

**POTATO-JEL NATURAL:** is the COSMOS alternative but with poorer performance than AGENAJEL CLEAR.

**AGENAJEL 20.306:** a starch thickener which can be used to stabilise a wide range of cosmetic formulations such as shampoos and shower gels. Many synergies can be seen with other natural thickeners such as xanthan gum, locust bean gum and cellulose to achieve higher viscosities, with lower use levels.

## ABSORBENT STARCH.

**RICE PO<sub>4</sub> NATURAL** is the perfect choice for natural mousses. In combination with AGENAJEL 20.306 the foam structure and stability are improved. Its oil absorption properties also mean excess oil on the hair is controlled.



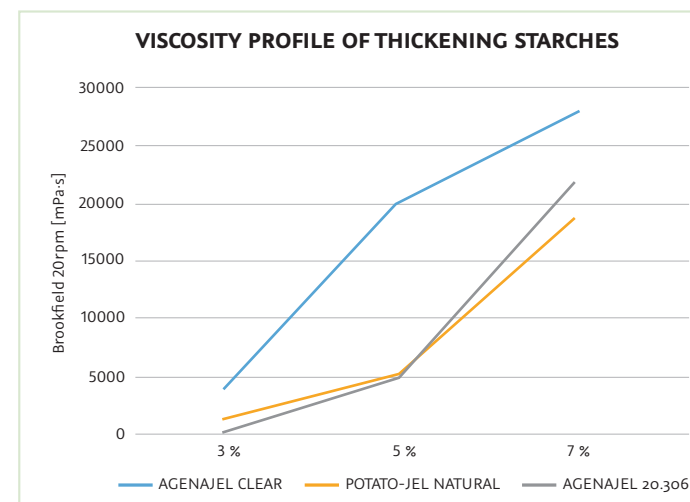
### Overview

## THICKENING STARCHES for HAIR STYLING PRODUCTS.

Starches which thicken are suitable for many cosmetic applications. Many synergies can be seen with other natural thickeners such as xanthan gum, locust bean gum and cellulose which allow many textures and viscosities to be achieved in the final formulations.



Fig. 6. Dried thickener starch films to show transparency



**Gel production procedure:** Make a premix of Starch Thickener and 15% AGENABON 20.219. Add Premix into hot water and stir 10 min at 1500 rpm with turbine stirrer. Cool down to room temperature and measure viscosity with Brookfield at 20 rpm.

### Applications

## AEROSOL based STYLING MOUSSE.

The unique combination of different starch types, from styling to thickeners, show there is now no need to use synthetic polymers to achieve high performing hair styling mousses. The styling characteristics are met or exceeded with improved high humidity curl and curl memory combined with excellent hair feel.

	with AGENANOVA 30.326	Formulation with AGENABON 20.219
Aqua		Up to 100 %
Xanthan Gum		0,15%
Glycerin		0,5 - 2,0%
Coco-Glucoside or Caprylyl/Capryl Glucoside		0,5 - 1,5%
Distarch Phosphate (AGENAJEL 20.306)	2,8 %	2,4 %
Maltodextrin (AGENANOVA 30.326)	2,8 %	-
Hydrolyzed Corn Starch (AGENABON 20.219)	-	2,8 %
Distarch Phosphate (RICE PO <sub>4</sub> NATURAL)	1,9%	1,9%
pH Adjustment (Sodium Hydroxide, Citric Acid)		q.s.
As desired		q.s.
Parfume		q.s.
Propellant (Isobutane, Propane, Butane)		6,0 %

### Description

## FOAM COMPARISON. CURL RETENTION. HAIR.



Fig. 8. Foam stability

### CURL RETENTION

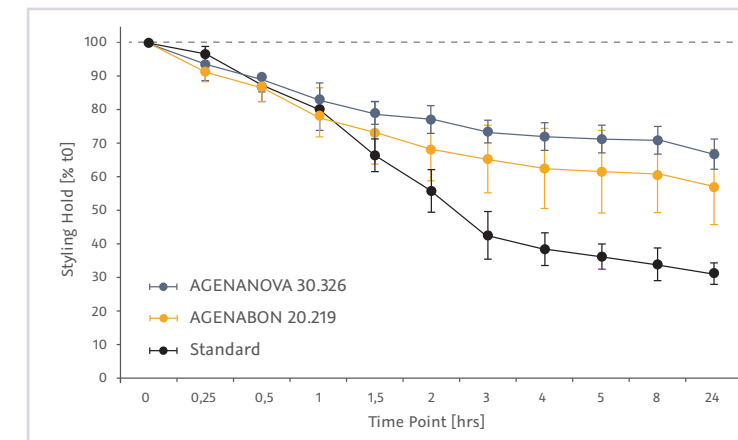
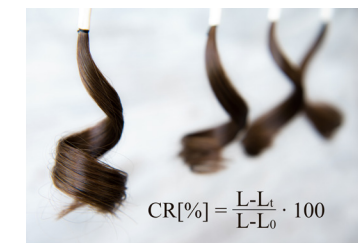


Fig. 7. Comparison change in length of curled hair swatches, 24 hrs. 80% moisture.



$$CR[\%] = \frac{L-L_t}{L-L_0} \cdot 100$$

For more information ask for AGRANA's Formulation & Test Report HAIR STYLING FOAMS







### Application

## PUMP FOAM SOLUTIONS for NATURAL STYLING.

Hair styling from a hair mousse format, results in improved smoothness, more texture whilst giving volume, protection and even conditioning benefits. Mousses from an pump air foamer, shows an alternative option to an aerosol format whilst retaining a perfect mousse texture.



Fig. 9. Comparison of 3 pump foam solutions.

- Creamy soft foam
  - Quick styling
  - Natural hold
  - Soft feel after application
- Light, quick collapsing foam
  - Alcohol free
  - Medium hold
  - Flexible feel after application
- Rich, creamy foam
  - Strong, flexible hold
  - Defined curls
  - Better definition

### Application formulation 1

## NATURAL HAIR STYLING MOUSSE.

With **AGENABON 20.219** and **MAIZE-STYLE ORGANIC**  
 "Formulated and developed by Azelis Personal Care EMEA, UK (ref. 21016064)"

A natural hair styling mousse foam for styling hair with creamy foam and strong styling properties. This mousse was developed specially for use with air foamer packaging.

**Manufacturing instructions:** Premix all ingredients except alcohol. Add alcohol in the end to the ready-made formulation.

Ingredients	INCI-Name	% w/w	Supplier
Deionised Water	Aqua	61,40	
Alcohol	Alcohol Denat.	20,00	
<b>AGENABON 20.219</b>	<b>Hydrolyzed Corn Starch</b>	<b>10,00</b>	<b>AGRANA</b>
<b>MAIZE-STYLE ORGANIC</b>	<b>Hydrolyzed Corn Starch</b>	<b>3,00</b>	<b>AGRANA</b>
Keramare™	Aqua, Glycerin, Cystoseira, Compressa Extract, Zea mays (Corn) Starch, Benzyl Alcohol, Dehydroacetic Acid, Sodium Benzoate, Gluconolactone, Calcium Gluconate	3,00	Provitall
Eversoft® UCS 30S	Aqua, Disodium Cocoyl Glutamate	2,00	Sino Lion
Sharon Biomix™ Clear	Phenoxyethanol, Glycerine, Citrus Reticulata Fruit Extract, Citrus Aurantium Amara Fruit Extract, Citrus Sinensis Peel Extract, Ascorbic acid, Citric acid, Lactic acid, Aqua	0,50	Sharon
Pomegranate and Honey 804	Parfum	0,10	IFF

### Application formulation 2

## FRAGRANCE FREE NATURAL HAIR-STYLING MOUSSE.

With **AGENABON 20.219** and **MAIZE-STYLE ORGANIC**  
 "Formulated and developed by Azelis Personal Care EMEA, Germany (ref. 21016046)"

A fragrance free, pump, hair styling mousse with natural styling properties.

**Manufacturing instructions:** Mix all ingredients.

Ingredients	INCI-Name	% w/w	Supplier
Deionised Water	Aqua	79,50	
<b>AGENABON 20.219</b>	<b>Hydrolyzed Corn Starch</b>	<b>10,00</b>	<b>AGRANA</b>
<b>MAIZE-STYLE ORGANIC</b>	<b>Hydrolyzed Corn Starch</b>	<b>3,00</b>	<b>AGRANA</b>
Keramare™	Aqua, Glycerin, Cystoseira, Compressa Extract, Zea mays (Corn) Starch, Benzyl Alcohol, Dehydroacetic Acid, Sodium Benzoate, Gluconolactone, Calcium Gluconate	3,00	Provitall
Holisurf® HF	Hydrolyzed Candida, Bombicola/Glucose/Rapeseed Oil Ferment Extract	4,00	Holiferm
Sharon Biomix™ Clear	Phenoxyethanol, Glycerin, Citrus Reticulata Fruit Extract, Citrus Aurantium Amara Fruit Extract, Citrus Aurantium Sinensis Peel Extract, Ascorbic Acid, Citric Acid, Lactic Acid	0,50	Sharon

### Application formulation 3

## STRONG HOLD NATURAL HAIR-STYLING MOUSSE.

with **AGENABON 20.219**  
 "Formulated and developed by Azelis Personal Care EMEA, UK (ref. 21016041\_01)"

A natural hair styling mousse, with rich creamy foam to leave the hair soft yet styled. This mousse was developed specially for use with air foamer packaging.

**Manufacturing instructions:** Premix all ingredients except alcohol. Add alcohol in the end to the ready-made formulation.

Ingredients	INCI-Name	% w/w	Supplier
Deionised Water	Aqua	59,40	
Alcohol	Alcohol Denat.	20,00	
<b>AGENABON 20.219</b>	<b>Hydrolyzed Corn Starch</b>	<b>15,00</b>	<b>AGRANA</b>
Keracyn™	Propanediol, Aqua, Glycerin, Cynara scolymus Leaf Extract	3,00	Provitall
Eversoft® UCS 30S	Aqua, Disodium Cocoyl Glutamate	2,00	Sino Lion
Sharon Biomix™ Clear	Phenoxyethanol, Glycerine, Citrus Reticulata Fruit Extract, Citrus Aurantium Amara Fruit Extract, Citrus Sinensis Peel Extract, Ascorbic acid, Citric acid, Lactic acid, Aqua	0,50	Sharon
Pomegranate and Honey 804	Parfum	0,10	IFF



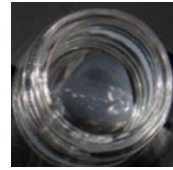


Trendy

# HAIR & BEARD STYLING with THICKENING STARCHES and STARCH BASED STYLING AGENTS.

Styling gels are usually synthetic polymer thickened hydrogels in which a special styling polymer provides the styling effect (stiffness/hold). With AGENAJEL CLEAR, naturally derived, semi-transparent hydrogels with comparable rheological properties can be produced.

Natural Hair Gel with AGENAJEL CLEAR and AGENABON 20.219



AGENABON 20.219 and AGENANOVA 30.326 and MAIZE-STYLE ORGANIC takes over the function of the styling polymer with excellent performance parameters such as stiffness and curl retention, which are comparable to those of PVP derivatives. In addition, AGENAJEL CLEAR based hair gels are characterized by high flexibility.

Application

## HAIR STYLING GEL.

With AGENABON 20.219 and AGENAJEL CLEAR "Formulated and developed by AGRANA Research & Innovation Center GmbH"

Manufacturing instructions: Heat Phase A up to 70°C. Add Phase B to Phase A and stir intensively until the gel is homogeneous. Adjust pH 6,5 – 7,0 with Citric Acid /NaOH.



Ingredients	INCI-Name	% w/w	Supplier
<b>PHASE A</b>			
Demin. Water	Aqua	73,50	
Glycerine	Glycerin	4,00	
<b>AGENABON 20.219</b>	<b>Hydrolyzed Corn Starch</b>	<b>10,00</b>	<b>AGRANA</b>
<b>PHASE B</b>			
<b>AGENAJEL CLEAR</b>	<b>Hydroxypropyl Starch Phosphate</b>	<b>7,50</b>	<b>AGRANA</b>
<b>PHASE C</b>			
Ethanol	Ethanol	4,00	
Phenoxyethanol	Phenoxyethanol	1,00	

Addition of ethanol speeds up drying behavior on the hair.

Application

## BEARD GEL with MOISTURIZING EFFECT.

With AGENAJEL CLEAR and PuraBeet® Betaine Anhydrous "Formulated and developed by Azelis Personal Care EMEA, Germany (ref. 956-11-7)"

Manufacturing instructions: Mix Phase A until the solution is clear. Heat Phase A up to 70°C. Add Phase B to Phase A and homogenize. Cool down to room temperature and add Phase C to phase AB. Adjust pH 5,3 with Citric Acid.

Ingredients	INCI-Name	% w/w	Supplier
<b>PHASE A</b>			
Demin. Water	Aqua	68,40	
BLANOVA® Active D-Panthenol 75 %	Panthenol, Aqua	1,00	Azelis
Glycerine	Glycerin	4,00	
Phenoxyethanol	Phenoxyethanol	0,60	
<b>AGENABON 20.219</b>	<b>Hydrolyzed Corn Starch</b>	<b>5,00</b>	<b>AGRANA</b>
<b>PHASE B</b>			
<b>AGENAJEL CLEAR</b>	<b>Hydroxypropyl Starch Phosphate</b>		<b>AGRANA</b>
<b>PHASE C</b>			
Demin. Water	Aqua	10,00	
<b>PuraBeet® Betaine Anhydrous</b>	<b>Betaine</b>	<b>4,00</b>	<b>AGRANA</b>

New formulation concept with AGENAJEL CLEAR for naturally derived semi-transparent Beard Gel.

Application

## STYLING PASTE with our NATURAL STYLING AGENTS.

With AGENANOVA 30.326 and MAIZE-STYLE ORGANIC with strong hold. Developed from KahlWax and reformulated at AGRANA Research & Innovation Center GmbH.

Manufacturing instructions: Mix water and propylene glycol, add AGENANOVA and MAIZE-STYLE under stirring, and dis-solve. Heat phase A ingredients to 85°C. Mix phase B ingredients and heat to 85°C. Add phase B to A under stirring. Allow the bulk adjust pH to 5,5 with Citric Acid/NaOH.

Ingredients	INCI-Name	% w/w	Supplier
<b>PHASE A</b>			
Water	Aqua	37,50	
Propylene Glycol	Propylene Glycol	4,00	
<b>AGENANOVA 30.326</b>	<b>Maltodextrin</b>	<b>10,00</b>	<b>AGRANA</b>
<b>MAIZE-STYLE ORGANIC</b>	<b>Hydrolyzed Corn Starch</b>	<b>3,00</b>	<b>AGRANA</b>
<b>PHASE B</b>			
KahlWax 8104 White Beeswax	Cera Alba	13,00	KahlWax
KahlJelly 7036 PLUS MB Vego	Ricinus Communis Seed Oil, Rhus Vermidiflua Peel Cera, Ascorbyl Palmitate, Tocopherol, Helianthus Annuus Seed Oil	15,00	KahlWax
Genapol T 250 P	Cetareth-25	4,50	Clariant
Hostaphat KL 340 D	Trilaureth-4 Phosphate	2,50	BASF
Apriol CSA 50 Ecorol 68/50 P	Cetearly Alcohol	3,00	Lubrizol
Sympatens-O / 120 G	Glyceryl Stearate (and) PEG-100 Stearate	3,00	Stockmeier
Ecorol GB 20	Octyldodecanol	4,00	Stockmeier
<b>PHASE C</b>			
Phenoxyethanol		0,50	

This styling paste allows to shape your hair, adding volume, texture and hold.

Usage of combination of our AGENANOVA 30.326 and MAIZE-STYLE ORGANIC can replace synthetic styling agents without loss of performance.





[agrana.com](http://agrana.com)



## THE ALL NATURAL STYLING SOLUTION.

Formulate your natural GREEN styling mousses  
with AGRANA's unique and functional starches.

[WWW.AGRANA.COM](http://WWW.AGRANA.COM)

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