



Amaze™ Nordic Barley

Beautifying by nature



INCI: Hordeum Vulgare Seed Flour

A 100% natural visual and sensorial formulation enhancer

Amaze Nordic Barley is a 100% natural, unmodified, COSMOS approved starch. The pure barley is regionally sourced from Scandinavia and produced in an eco-conscious process as a side-stream of the beverage industry. It has excellent microbial purity and so is produced without the requirement for irradiation or other treatments.

The unique sensory benefits delivered in formulation by the Amaze Nordic Barley are a result of the product's unique singular oblate spheroid morphology. The product allows formulators to achieve excellent skin feel from skin and sun care emulsions. In addition, the Barley starch delivers a 100 percent natural oil absorber for dry shampoo applications. Finally, it can deliver blurring and nude effects for color cosmetics.

Conforms to COSMOS standard:

- No additives
- No irradiation
- Readily biodegradable
- GMO free
- INCI globally accepted

Suggested use levels

Application	Use level
Dry shampoo	2-5%
Waxes and Pomades	1-10%
Creams and Emulsions	2-10%
Color cosmetics	5-50%

Recommended applications

Amaze Nordic Barley can be used in a broad variety of cosmetic formulations and creates possibilities for a wide range of new, innovative products.

In **skin and sun care**, Amaze Nordic Barley helps to control shine due to its excellent oil absorbing properties. It reduces tackiness, provides more texture, delivers a softer feel to emulsion formulations. In addition, Amaze Nordic Barley can be used as an effective replacement for microplastics like Nylon-12 and PMMA.

In **haircare**, Amaze Nordic Barley is well suited for dry shampoo with its smooth and natural feel on hair enabling conditioning claims without the usage of cetrimonium chloride. It gives a feel which is less dry and less rough compared to other starches. Amaze Nordic Barley provides a more natural styling with good volume development. It can also be used in other styling products like cream, pomades, and waxes to create new and engaging textures.

In **color cosmetics** formulations, Amaze Nordic Barley provides a similar light scattering effect to that of young skin which results in a nude look that corrects imperfections such as freckles and dark spots. The fine particle size and unique morphology makes the transition between covered and non-covered skin almost invisible. It instantly blurs appearance of wrinkles by softening edges through light diffusion.



Product highlights

Features	Benefits
White free flowing, fine powder with unique morphology	Provides visual modification (translucent, nude look) mainly for color cosmetics Provides aesthetic modification and improved feel to creams, emulsions and dry shampoo
Good oil and water absorption properties	Reduces shine and tackiness in creams and sunscreens
Compatible with commonly used formulation ingredients	Robust and reliable performance
100% natural	COSMOS approved Fulfills market requirements like eco-conscious, clean label, GMO-free, microplastic-free, aluminum-free



Formulation guidelines

Solubility

Amaze Nordic Barley is an insoluble powder in water and ethanol unless heated above 45°C. When the starch is heated above 45°C the granule will begin to swell and cook out resulting in an increase in formulation viscosity.

Compatibility

Amaze Nordic Barley is compatible with a wide range of commonly used formulation ingredients in skin and hair formulations. In its powder form it is compatible with dry shampoo base including but not limited to high levels of ethanol (80w%), magnesium stearate, other starches and hair styling polymers like **Amphomer® HC** and **Balance® 47**. It is compatible with common skincare ingredients like vegetable oils, emulsifiers, moisturizers, film formers and UV-filters. It is also compatible with all preservative systems tested to date including sodium benzoate, potassium sorbate, phenoxyethanol and ethylhexyl glycerine. In color cosmetics it is compatible with commonly used ingredients such as waxes, oils, other starches, minerals and pigments.

Use in skin and sun care emulsions

Used as an aesthetic modifier, Amaze Nordic Barley is most suitably added to the batch at the end of processing below 45°C. The post addition can be easily achieved by sprinkling in the top of the emulsion or slurring with glycerin, propylene glycol or similar ingredients. If the intended use is as a rheology modifier and aesthetic modifier it can be used above 45°C. It is important to note that if the starch is cooked out it will increase the viscosity but some aesthetic enhancement properties may be lost.



Performance properties

On-skin subjective evaluations

Test in face cream

Subjective studies of a natural face cream were performed by a group of trained panelists on skin in order to determine the performance of Amaze Nordic Barley compared to a blank formulation without starch. The face cream included 5% Amaze Nordic Barley or was free of any aesthetic modifier.

The creams were applied in a defined volume on a defined area on the inner forearm. Differences in the performance attributes were noted. The data below is a result of this comparison and is reported at a 95% confidence level.

Table 1: Subjective testing on skin:
Performance of 5% Amaze Nordic Barley vs. blank formulation

Immediate feel	Spreadability	NSD
	Oiliness	+
	Gloss	+
After feel	Stickiness	NSD
	Slipperiness	NSD
	Residue	NSD
	Powderiness	+
	Oiliness	+
	Whitening	NSD

NSD = No Statistical Difference

Formulation

Natural face cream (14797-44)

Trade name	INCI name	W %
Phase A		
Deionized Water	Water (Aqua)	68.70
Amaze XT Polymer	Dehydroxanthan Gum	0.15
Glycerin	Glycerin	0.30
Phase B		
Dragorin GOC	Glyceryl Oleate Citrate (and) Caprylic/Capric Triglyceride	2.00
Lanette 16	Cetyl Alcohol	4.00
Dracorin CE	Glyceryl Stearate Citrate	0.75
Lipex Shea	Butyrospermum Parkii (Shea) Butter	9.00
Cetiol LC	Coco-Caprylate/Caprate	2.00
Cropure Sweet Almond	Prunus Amygdalus Dulcis (Sweet Almond) Oil	5.00
Phase C		
Aquaguard 9093	Sodium Benzoate & Sodium Dehydroacetate	0.20
Citric Acid 25% solution	Aqua, Citric acid	0.20
Glycerin	Glycerin	2.70
Amaze Nordic Barley or Deionized Water	Hordeum Vulgare Seed Flour or Water (Aqua)	5.00
Totals		100.00
pH	5.0-5.5	
Viscosity	11000-13000 mPas Brookfield RV, 10rpm	

Result: The test showed that the cream with Amaze Nordic Barley achieved significantly enhanced sensorial properties. Amaze Nordic Barley made the cream less oily, less glossy and superior to the blank formulation.



On-skin sunscreen evaluations

Subjective evaluations in sunscreen products were performed by a group of trained panelists on skin to determine the performance of Amaze Nordic Barley compared to high-performing synthetic alternatives. In the study, each sunscreen formulation included 5% of aesthetic modifier. The creams were applied in a defined volume on a defined area on the inner forearm. Differences in the performance attributes were noted. The data shown on table 2 is a result of this comparison and is reported at a 95% confidence level.

Table 2: Subjective testing on skin:
Performance of Amaze Nordic Barley vs. synthetic polymers

		Amaze Nordic Barley vs. PMMA	Amaze Nordic Barley vs. Nylon-12
Immediate feel	Spreadability	NSD	NSD
	Oiliness	NSD	NSD
	Gloss	NSD	NSD
	Stickiness	NSD	NSD
	Slipperiness	NSD	NSD
After feel	Residue	NSD	NSD
	Powderiness	NSD	NSD
	Oiliness	NSD	NSD
	Whitening	NSD	NSD

NSD = No Statistical Difference



Formulation

Sunscreen formulation SPF 50+ (14797-28)

Trade name	INCI name	W %
Phase A		
Deionized Water	Water (Aqua)	40.00
Dissolvine® GL-47-S chelate (47% active)	Tetrasodium Glutamate Diacetate	0.20
Propylene Glycol U.S.P.	Propylene Glycol	3.00
Amaze XT Polymer	Dehydroxanthan Gum	0.30
Neo Heliopan AP	Disodium Phenyl Dibenzenimidazole Tetrasulfonate	1.00
Sodium Hydroxide	Sodium Hydroxide (25%)	0.50
Phase B		
Neo Heliopan® OS	Ethylhexyl Salicylate	5.00
Neo Heliopan® 357	Butyl Methoxydibenzoylmethane	5.00
Neo Heliopan® HMS	Homosalate	10.00
Tinosorb® S	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine (BEMT)	3.00
Neo Heliopan® 303	Octocrylene	8.00
Emulsiphos	Potassium Cetyl Phosphate (and) Hydrogenated Palm Glycerides	2.50
Tegosoft OS	Ethylhexyl Stearate	3.00
Carbopol® Ultrez 21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30
Cetiol B	Dibutyl Adipate	5.00
Phase C		
Dermacryl® X Polymer	Acrylates Copolymer	2.20
Microcare® PHC	Phenoxyethanol (and) Chlorphenesin (and) Glycerin	1.00
Phase D		
Glycerin	Glycerol	5.00
Depending	Aesthetic modifier	5.00
Totals		100.00
pH	6.5-7.0	
Viscosity	9000-11000 mPas, Brookfield RV, 10rpm	

Result: The test showed that Amaze Nordic Barley provides the same performance as conventional widely used synthetic additives that include microplastics. Tests in other creams also showed that Amaze Nordic Barley provides more texture and gives a soft, less oily feel.

Evaluations in dry shampoo

Dry shampoo formulation

Dry shampoo 14797-27

Trade name	INCI name	W %	W %	W %	W %
Ethanol den 1:2	Ethanol	14	14	14	14
Magnesium Stearate	Magnesium Stearate	1	1	1	1
Amaze Nordic Barley	Hordeum Vulgare Seed Flour	5			
Rice starch	Rice starch				5
Propellant					
AP 40	AP 40	80	80	80	80
Totals		100	100	100	100

Hair tresses were sprayed with different dry shampoos with a standardized procedure. Two tresses were sprayed with a dry shampoo including rice starch and two tresses were sprayed with a dry shampoo including Amaze Nordic Barley. The dry shampoo included 5% starch (formulation 14797-27). After drying, the tresses were visually evaluated for whitening.

Result: Clearly less whitening was observed on the tresses with Amaze Nordic Barley (see image 1).



Image 1: Whitening of rice starch (left) and Amaze Nordic Barley (right).

Subjective evaluation comparison to rice starch

Dry shampoo 14797-27 with 5% starch Amaze Nordic Barley vs. rice starch

Gloss / Shine	+
Whitening	+
Feel / Softness	+
Removeability	NSD
Brushability	NSD
Frizz / Flyaway	NSD

NSD = No Statistical Difference

Result: The dry shampoo with Amaze Nordic Barley showed significantly more shine, softness and less whitening compared to a dry shampoo using native rice starch.



Subjective test on hair tresses comparison to commercial benchmark

Subjective evaluations in conditioning dry-shampoo were performed by a group of trained panelists on hair tresses to determine the performance of Amaze Nordic Barley compared to a market-leading commercial benchmark that is promoted as natural, light and bare using cetrimonium chloride coated rice starch for dry shampoo and conditioning. The dry shampoo with Amaze Nordic Barley includes 5% starch. The dry shampoos were sprayed on the tresses following a standardized procedure. Differences in the performance attributes were noted. The data below is a result of this comparison and is reported at a 95% confidence level.

Dry shampoo 14797-27 with 5% starch Amaze Nordic Barley vs. "natural and light" commercial benchmark

Gloss / Shine	NSD
Whitening	+
Feel / Softness	+
Removeability	NSD
Brushability	NSD
Frizz / Flyaway	NSD

NSD = No Statistical Difference

Result: The dry shampoo with Amaze Nordic Barley is significantly less whitening compared to the commercial benchmark. Even without the use of cetrimonium chloride, the prototype with Amaze Nordic Barley outperforms the benchmark on softness, enabling clean label conditioning claims.

Evaluations in texture spray

Texture spray formulation

Invisible volumizing texture spray 2860-36

Trade name	INCI name	W %
SD Alcohol 40-B (Anhydrous)	SD Alcohol 40-B	42.44
Amphomer® HC Polymer	Acrylates/ Octylacrylamide Copolymer	1.00
AMP-Ultra™ PC 1000	Aminomethyl Propanol	0.25
Amaze Nordic Barley	Hordeum Vulgare Seed Flour	2.00
Magnesium Stearate NF FCC Kosher	Magnesium Stearate	0.25
Dow Corning® 556 Cosmetic Grade Fluid	Phenyl Trimethicone	0.75
Citroflex® 2	Triethyl Citrate	0.25
Xiameter® OFX-5220 Fluid	PEG/PPG-17/18 Dimethicone	0.10
Parsol MCX	Octinoxate	0.05
Propellant		
Aeron A-17	Butane	23.50
Demeon® D	Dimethyl Ether	29.41

Test on mannequin (half-head comparison)

The mannequin was styled according to a defined process where each product was applied to one half of the head. The hair was horizontally parted in three sections and the product was applied with three-seconds sprays. Following application, the hair was slightly lifted upwards to allow for volume generation.

Two texture sprays were compared, the "Invisible volumizing texture spray (2860-36)" with Amaze Nordic Barley and a premium commercial benchmark from the North American market.



The image below shows the volume generated after the hair was allowed to fall naturally after the styling process.

The image below shows the mannequin head after drying and being placed in 70F/90% RH environment for six hours.



Image 2: Texture Spray with Amaze Nordic Barley (left) and commercial benchmark (right).

Image 3: Texture Spray with Amaze Nordic Barley (left) and commercial benchmark (right).

Result: Based on feel, there was more texture from the commercial benchmark and this spray felt grittier (like sandpaper). The Invisible volumizing texture spray 2860-36 with Amaze Nordic Barley had better hold as a working spray and built more volume than the benchmark.

Both hairsprays were equally impacted by the humidity.



Storage and handling

Amaze Nordic Barley should be stored under ambient conditions. The product is supplied in sealed bags and should be kept tightly sealed and in a cool location to prevent unintended microbial contamination.

Health and safety

Information on Amaze Nordic Barley relating to the EU Cosmetic Regulation 1223/2009 or EU Cosmetic Directive 76/678/EC is available on request.

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