

Product Booklet

Amylomer™ Products

Cationic and
Non-Ionic Starch
Conditioners
for over 20 years



GRÄFECHEMIE

ADDITIVES FROM PLANT-BASED RAW MATERIALS

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powered by



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Effectableyours
Platform of Expertise



About us

Your Hair Care Experts –
Authentic, Distinctive, Efficient.

We bring together the best of nature and science, because our products not only care for all hair and skin types, but also for the world we live in.

Economic growth must go hand in hand with environmental and social sustainability, a principle we have been committed to for over 20 years.

Innovative raw materials and modern cosmetic concepts underpin our approach and the proof of efficacy by “effectableyours” reflects our know-how.

We believe hair is an expression of personality and underlines individuality.



**Join us on a
journey through
the Amylomer™
world.**

(Made in Germany)

Raw Material



Example: potato starch

Transparency of the supply chain

Our starch is grown and harvested locally. For more than 20 years it has been processed into Amylomer™ products by our ISO certified German contract manufacturer.



Amylomer™: the effective film-forming alternative from naturally derived polymers

We offer hair and skin conditioning agents with improved biodegradability. Select from our Amylomer™ range products to gain the best performance for your concept.

Based on sustainable plant starch as a starting material, we use chemical modification of these natural polymers to yield the optimal application profile for different hair and skin types.



AMYLOMER™ products are:



paraben-free



not tested on animals



not genetically modified
and non toxic



based on “renewable
plants”



Carbon neutral

Product

ClimatePartner.com/17346-2109-1001

Product Portfolio

Cationic Conditioning Agents

| Amylomer™ | CAT 531 | CAT 531 AS+ | Care 25 |
|-----------|---|-------------|---------|
| INCI | Starch Hydroxypropyltrimonium Chloride | | |
| Amylomer™ | HA-CAT 75 | H-Care 05 | |
| INCI | Hydroxypropyl Oxidized Starch PG Trimonium Chloride | | |

Non-Ionic Conditioning Agents

| Amylomer™ | HA-NI | CAT 531 AS+ | Care 25 |
|-----------|--|-------------|---------|
| INCI | Sodium Hydroxypropyl Oxidized Starch Succinate | | |







Amylomer™ CAT 531

Product Specification

- starch: potato
- INCI: Starch Hydroxypropyltrimonium Chloride
- product appearance: liquid
- active content: 20.0 %
- viscosity (20 °C, Brookfield): 150 – 500 mPa*s
- pH-value: ~ 3.5 – 4.1
- charge: cationic
- degree of substitution: ~ 0.5
- molecular weight: ~ 1400 – 2200 kDa
- natural index: 93.64 %
- readily biodegradable: OECD 301 (28 days) 64.26%
- aquatox (Daphnia): 53 mg/L (OECD 202)

Application

- shampoo for fine and normal hair
- conditioner
- solid bar
- particularly suitable for European hair
- body wash

Performance

- wet and dry hair feels soft conditioned without tacky feel
- improved wet and dry combing force
- good anti-tangling effect





Amylomer™ CAT 531 AS+

Product Specification

- starch: potato and rice
- INCI: Starch Hydroxypropyltrimonium Chloride
- product appearance: liquid
- active content: 21.6 %
- viscosity (20 °C, Brookfield): 500 – 1000 mPa*s
- pH-value: ~ 3.4 – 4.3
- charge: cationic
- degree of substitution: ~ 0.5
- molecular weight: ~ 5700 kDa
- natural index: 91.44 %
- readily biodegradable: OECD 301 (28 days) ~ 64.26%
- aquatox (Daphnia): 53 mg/L (OECD 202)

Application

- shampoo for strong and asian hair
- conditioner
- solid bar
- body wash

Performance

- wet and dry hair, soft to the touch without film-feeling
- improved wet and dry combing force
- good anti-tangling effect
- extremely soft foam



Amylomer™ Care 25

Product Specification

- starch: potato
- INCI: Starch Hydroxypropyltrimonium Chloride
- product appearance: liquid
- active content: 19.6 %
- viscosity (20 °C, Brookfield): 400 – 800 mPa*s
- pH-value: ~ 3.5 – 4.1
- charge: cationic
- degree of substitution: ~ 0.25
- molecular weight: ~1800 kDa
- natural index: 92.97 %
- readily biodegradable: OECD 301 (28 days) 73%
- aquatox (Algae): 10-100 mg/L (OECD 201)

Application

- shampoo for normal and strong hair
- solid bar
- conditioner
- body wash
- liquid soaps
- face cleansing

Performance

- improves combing force and feel of wet and dry hair
- reduction of hair porosity
- even dry hair with porous / split ends feels soft and silky





Amylomer™ HA-CAT 75

Product Specification

- starch: potato
- INCI: Starch Hydroxypropyl PG-Trimonium Chloride
- product appearance: liquid
- active content: 29.0 %
- viscosity (20 °C, Brookfield): 350 – 500 mPa*s
- pH-value: ~ 3.5 – 4.1
- charge: cationic
- degree of substitution: ~ 0.75
- molecular weight: ~ 1300 kDa
- natural index: 83.10 %
- biodegradability: OECD 301 (28 days) 15 %
- aquatox (Algae): 10-100 mg/L (OECD 201)

Application

- shampoo and conditioner for strong and unruly/frizzy hair
- solid bar
- body wash

Performance

- hair feels smooth
- good combing force
- prolonged combing force



Amylomer™ H-Care 05

Product Specification

- starch: potato
- INCI: Starch Hydroxypropyl PG-Trimonium Chloride
- product appearance: liquid
- active content: 26.18 %
- viscosity (20 °C, Brookfield): 350 – 550 mPa*s
- pH-value: ~ 3.5 – 4.1

- charge: cationic
- degree of substitution: ~ 0.05
- molecular weight: ~ 1000 kDa

- natural index: 98.65 %
- biodegradability: OECD 301 (28 days) ~ 27.5 %
- aquatox (Algae): 10-100 mg/L (OECD 201)

Application

- shampoo and conditioner for strong and unruly hair
- permanent and semi-permanent hair colour, bleaching agents
- body wash
- face cleansing

Performance

- gives curls more grip and hold → curl retention method
- nourishing for hair and skin
- even dry hair with porous / split ends feels soft and silky



Amylomer™ HA-NI

Product Specification

- starch: potato
- INCI: Sodium Hydroxypropyl Oxidized Starch Succinate
- product appearance: liquid
- active content: 23.6 %
- viscosity (20 °C, Brookfield): 200 – 600 mPa*s
- pH-value: ~ 4.6 – 5.2
- charge: non-ionic
- degree of substitution: ~ 0.02
- molecular weight: ~ 1000 kDa
- natural index: 92.10 %
- readily biodegradable: OECD 301 (28 days) 61.6 %
- aquatox (Algae): >100mg/L (OECD 201)

Application

- shampoo
- body wash
- face cleansing
- face cream and body lotion
- particularly suitable for baby care
- sensorial modifier/ for texture

Performance

- adds shine to the hair
- gives curls more grip and hold → curl retention method
- non-ionic conditioner
- no tears



Properties and Applications

Properties

| Amylomer™ | foam improvement | hair conditioning | sensory effects on hair | curl retention | transparent systems |
|-------------|------------------|-------------------|-------------------------|----------------|---------------------|
| CAT 531 | ◆◆◆ | ◆◆ | ◆◆ | ◆ | ◆◆◆ |
| CAT 531 AS+ | ◆◆◆ | ◆◆ | ◆◆◆ | ◆ | ◆◆◆ |
| Care 25 | ◆◆◆ | ◆◆ | ◆◆ | ◆◆ | ◆◆◆ |
| HA-CAT 75 | ◆◆ | ◆◆◆ | ◆◆◆ | ◆ | ◆◆ |
| H-Care 05 | ◆◆ | ◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ |
| HA-NI | ◆◆◆ | ◆ | ◆ | ◆◆◆ | ◆◆◆ |

Applications

| Amylomer™ | shampoo | body wash | liquid soap | facial wash | sensirive skin/baby |
|-------------|---------|-----------|-------------|-------------|---------------------|
| CAT 531 | ◆◆◆ | ◆◆◆ | ◆◆ | ◆ | ◆◆ |
| CAT 531 AS+ | ◆◆◆ | ◆◆◆ | ◆◆ | ◆ | ◆◆ |
| Care 25 | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ |
| HA-CAT 75 | ◆◆◆ | ◆◆ | ◆◆ | ◆ | ◆◆ |
| H-Care 05 | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ |
| HA-NI | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ | ◆◆◆ |

◆ = suitable ◆◆ = well suitable ◆◆◆ = very suitable

Different chemical modifications, molecular weight and degrees of substitution provide a wide range of different properties for conditioning different hair types and applications





**For conditioning
different hair types:**



straight



wavy



curly



coily



kinky

... from fine
to strong hair.

Formulation Advice

- easy to use in laboratory and production
- no predilution is required
- dosage: 0.5 – 2 %
- pH-value: prefer at pH 6 +/-1
- can be added in any production step
- allows cold production process
- the viscosity of the surfactens systems remains at an almost constant level



Benefits

Formulator

- low dosage levels
- flexible product characteristics
- broad application potential in various formulation types
- only a negligible effect on formulation viscosity
- easy to combine and good compatibility with a variety of tensides
- highly compatible with other raw materials
- excellent oxidation stability
- synergistics with Guar / PQ10 et cetera

End consumer

- hair conditioning without the build-up effect
- improved foaming
- improved combability
- tangible impact
- reduced electrostatic charge
- does not penetrate the hair
- protects the hair from external influences

Production

- liquid concentrates enable simple mixing
- no prior dilution required
- suitable for automatic dosing within the production environment
- suitable for cold processes
- improved biodegradability
- negligible ecotoxicity



Packaging Unit and Storage

Our products are available worldwide.

Our products are available in various container sizes:

- 22-litre canister
- 210-litre bung drum
- 1,100-litre IBC

Storage

- temperature: between 5 °C – 25 °C in original closed package
- shelf life: 24 months



From Hamburg to the World

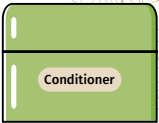
The development of our products and
our formulations have taken place in
one of the greenest cities in the world
... Hamburg!

Meet our
formulations
powered by



Foamy **Blankenese** Shampoo
Mild **Sternschanze** Shampoo
Caring **Sankt Pauli** Shampoo
Soft Solid Bar **Neustadt** Shampoo
Creamy Solid Bar **Winterhude** Shampoo
Nourishing **Uhlenhorst** Conditioner
Rich **Altona** Showergel
Silky **Hafencity** Body Lotion
Sensitive **Eppendorf** Body Lotion







Foamy **Blankenese** Shampoo

A clear and thick shampoo with a light and voluminous foam. The shampoo gives the hair a natural light-care feeling without any build-up effect.

Any Amylomer™ product can be added to this shampoo and develop its special conditioning effect.*

Shampoo - Conventional Surfactant System 1762-0011

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|------------------------|---|---------------------------|-------|
| A | Water | Aqua | - | 57.51 |
| A | Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 11.00 |
| A | Texapon® NSO BZ | Sodium Laureth Sulfate | BTC Europe GmbH | 28.00 |
| A | Sodium Benzoate | Sodium Benzoate | Tilge Robert E.M. | 0.30 |
| A | Potassium Sorbate | Potassium Sorbate | Tilge Robert E.M. | 0.20 |
| A | *Amylomer™ HA-CAT 75 | Hydroxypropyl Oxidized Starch PG Trimonium Chloride | Gräfe Chemie GmbH | 1.50 |
| A | Fragrance - Aqua Fresh | Fragrance | Nöring Naturprodukte GmbH | 1.00 |
| B | Citric Acid | Citric Acid | Azelis | 0.49 |

*Our Amylomer™ products offer a wide range of applications for all hair types and even sensitive skin.

Processing

- Mix ingredients of phase A in given order until completely dissolved and homogeneous distributed.
 - Adjust pH with phase B.
 - If desired: Increase viscosity by adding sodium chloride.
- appearance: clear shampoo
 - pH-value 4.3 – 4.7
 - viscosity 3600 – 6300 mPas
 - proven stability
 - microbiological safety challenge test pass
 - effectable yours test results page 38



Mild **Sternschanze** Shampoo

A clear and normal thick shampoo with a stable and voluminous foam that is a particularly mild cleanser. The shampoo gives the hair a natural light-care feeling without any build-up effect. Any Amylomer™ product can be added to this shampoo to develop its special conditioning effect.*

Shampoo - Natural Surfactant System 1762-0003

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|--------------------|--|---------------------------------|-------|
| A | Water | Aqua | - | 58.50 |
| A | Plantacare® 818 UP | Coco-Glucoside | BTC Europe GmbH | 23.00 |
| A | Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 6.00 |
| A | Sulfopon® 1216 G | Sodium Coco-Sulfate | BTC Europe GmbH | 8.00 |
| A | Sodium Benzoate | Sodium Benzoate | Tilge Robert E.M. | 0.30 |
| A | Potassium Sorbate | Potassium Sorbate | Tilge Robert E.M. | 0.20 |
| B | *Amylomer™ Care 25 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 1.50 |
| B | Fragrance - 93470 | Fragrance | eskage-eskamint Schierholz GmbH | 1.00 |
| C | Citric Acid | Citric Acid | Azelis | 1.50 |

*Our Amylomer™ products offer a wide range of applications for all hair types and even sensitive skin.

Processing

- Mix ingredients of phase A in given order and heat up to 60°C until completely dissolved.
 - At max. 45 °C the phase B in given order into the mixture, until everything is homogeneous.
 - Adjust pH with phase C.
 - If desired: Increase viscosity by adding sodium chloride.
- appearance: clear shampoo
 - pH-value 4.3 – 4.7
 - viscosity 11000 – 26000 mPas
 - proven stability
 - microbiological safety challenge test pass
 - effectable yours test results page 38





Caring **Sankt Pauli** Shampoo

A clear and normal thick shampoo with a caring and voluminous foam that that is a particularly mild cleanser. The shampoo gives the hair a natural light-care feeling without any build-up effect.

Our Amylomer™ products combine well with well with other care substances.

The possibilities for care are unlimited.

Shampoo – Natural Surfactant System with two Amylomer™ products and Inulin 1762-0008

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|--------------------|--|---------------------------------|-------|
| A | Water | Aqua | - | 63.90 |
| A | Plantacare® 818 UP | Coco-Glucoside | BTC Europe GmbH | 18.40 |
| A | Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 4.80 |
| A | Sulfopon® 1216 G | Sodium Coco-Sulfate | BTC Europe GmbH | 6.40 |
| A | Sodium Benzoate | Sodium Benzoate | TTilge Robert E.M. | 0.30 |
| A | Potassium Sorbate | Potassium Sorbate | Tilge Robert E.M. | 0.20 |
| B | Inutec® H25P | Inulin | C.H. Erbslöh GmbH & Co. KG | 1.00 |
| B | Amylomer™ CAT 531 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 2.00 |
| B | Amylomer™ HA-NI | Sodium Hydroxypropyl Oxidized Starch Succinate | Gräfe Chemie GmbH | 0.50 |
| B | Fragrance - 32187 | Fragrance | eskage-eskamint Schierholz GmbH | 1.00 |
| D | Citric Acid | Citric Acid | Azelis | 1.50 |

Processing

- Mix ingredients of phase A in given order and heat up to 60°C until completely dissolved.
 - At max. 45°C mix ingredients of phase B in given order, until everything is homogeneous.
 - Adjust pH with phase D.
 - If desired: Increase viscosity by adding sodium chloride.
- appearance: clear shampoo
 - pH-value 4.3 – 4.7
 - viscosity 3800 – 10400 mPas
 - proven stability
 - microbiological safety challenge test pass
 - effectable yours test results page 38



Soft Solid Bar **Neustadt** Shampoo

A light and white solid bar with a caring and voluminous foam that is a particularly mild cleanser. The shampoo gives the hair a natural light-care feeling without any build-up effect. Our Amylomer™ CAT 531 AS+ added here is particularly well suited for normal and strong hair, as well as European hair and beard hair.

Solid Bar – Natural Surfactant System 1762-0070-1

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|----------------------------|--|----------------------------|-------|
| A | Sulfopon® 1216 G | Sodium Coco-Sulfate | BTC Europe GmbH | 51.00 |
| A | Lanette® O | Cetearyl Alcohol | BTC Europe GmbH | 25.00 |
| A | Dermofeel® Viscolid MB | Hydrogenated Vegetable Oil | Evonik Dr. Straetmans GmbH | 5.00 |
| A | Glycerin 99% | Glycerin | All Organic Treasures GmbH | 2.00 |
| A | Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 2.00 |
| A | Plantacare® 1200 UP | Lauryl Glucoside | BTC Europe GmbH | 8.00 |
| A | Sodium Benzoate | Sodium Benzoate | Tilge Robert E.M. | 0.50 |
| A | Citric Acid | Citric Acid | Caesar & Loretz GmbH | 3.50 |
| A | Amylomer™ CAT 531 AS+ | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 2.00 |
| A | Fragrance – Grapefruit Oil | Fragrance | Nöring Naturprodukte GmbH | 1.00 |

Processing

- Mix all ingredients in given order and heat up to 60°C until completely dissolved.
 - Add the mixture into a mould and possibly press.
- appearance: white solid bar
 - pH-value N/A
 - viscosity N/A
 - proven stability
 - microbiological safety challenge test pass





Creamy Solid Bar **Winterhude** Shampoo

A creamy and white solid bar with a caring and voluminous foam that is a particularly mild cleanser. The shampoo gives the hair a natural light-care feeling without any build-up effect. Our Amylomer™ CAT 531 added here is particularly well suited for fine and normal hair as well as for European hair.

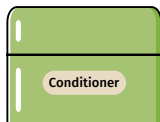
Solid Bar – Sulphatfree Surfactant System 1762-0072

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|---------------------------|--|----------------------------|-------|
| A | Elfan® AT 84 G - Powder | Sodium Cocoyl Isethionate | Azelis | 41.25 |
| A | Lanette® O | Cetearyl Alcohol | BTC Europe GmbH | 20.00 |
| A | Dermofeel® Viscolid MB | Hydrogenated Vegetable Oil | Evonik Dr. Straetmans GmbH | 10.00 |
| A | Sunflower Oil High Oleic | Helianthus Annuus Hybrid Oil | All Organic Treasures GmbH | 8.00 |
| B | Dermosoft® GMCY MB | Glyceryl Caprylate | Evonik Dr. Straetmans GmbH | 0.25 |
| B | Glycerin 99% | Glycerin | All Organic Treasures GmbH | 8.00 |
| C | Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 6.00 |
| C | Citric Acid | Citric Acid | Caesar & Loretz GmbH | 1.00 |
| C | Amylomer™ CAT 531 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 5.00 |
| C | Fragrance – floral fruity | Fragrance | Nöring Naturprodukte GmbH | 0.50 |

Processing

- Mix ingredients of phase A in given order and heat up to 85°C until completely dissolved.
 - Mix phase B extra and add to phase A.
 - Add ingredients of phase C in given order to phase A and heat up to 85°C until completely dissolved.
 - Add the mixture into a mould and possibly press.
- appearance: white solid bar
 - pH-value N/A
 - viscosity N/A
 - proven stability
 - microbiological safety challenge test pass

Nourishing **Uhlenhorst** Conditioner



A white cream conditioner that spreads well on the hands and easily in the hair. The special feature of this conditioner is that it may be rinsed out or left in the hair, depending on how much care the hair needs and what effect you want to achieve.

There is no build-up effect and a natural care feeling for the hair. Curls are defined and supported in their bounce, and the hair gets a natural shine.

Cream Conditioner – Rinse Off and No Rinse 1762-0101

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|-----------------------|--|---------------------------------|-------|
| A | Water | Aqua | - | 81.40 |
| A | Glycerin 99% | Glycerin | All Organic Treasures GmbH | 2.00 |
| A | Sodium Benzoate | Sodium Benzoate | Tilge Robert E.M. | 0.30 |
| A | Potassium Sorbate | Potassium Sorbate | Tilge Robert E.M. | 0.20 |
| B | Solagum™ TARA | Caesalpinia Spinosa Gum | Seppic GmbH | 1.20 |
| B | Lanette® O | Cetearyl Alcohol | BTC Europe GmbH | 6.00 |
| B | Dermofeel® GSC | Glyceryl Stearate Citrate | Surfachem Evonik Dr. Straetmans | 2.00 |
| B | Dermofeel® P-30 MB | PCA Glyceryl Oleate | Evonik Dr. Straetmans GmbH | 1.50 |
| B | Dermofeel® Sensolv MB | Isoamyl Laurate | Evonik Dr. Straetmans GmbH | 2.00 |
| C | Amylomer™ CAT 531 AS+ | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 2.00 |
| C | Fragrance - Tin Blue | Fragrance | Frey + Lau GmbH | 0.50 |
| D | Citric Acid | Citric Acid | Caesar & Loretz GmbH | 0.90 |

Processing

- Mix ingredients of phase A in given order and heat up to 80°C until completely dissolved.
 - In an extra vessel, give phase B in given order and heat up to 80 degree until completely dissolved.
 - At 80 degrees, add phase A and B together and homogenize.
 - At max. 45°C mix ingredients of phase C in given order, until everything is dissolved.
 - Adjust pH with phase D.
- appearance, white emulsion
 - pH-value 4.0 – 4.9
 - viscosity 35000 – 75000 mPas
 - proven stability
 - microbiological safety challenge test pass





Rich **Altona** Showergel

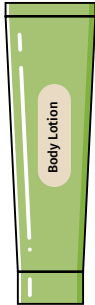
**A rich shower gel with a subtle foam and mild cleansing.
A nourishing shower experience that fulfils all the skins needs.**

Shower Gel – Natural Surfactant System 1762-0090

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|----------------------------|--|---------------------------|-------|
| A | Water | Aqua | - | 73.80 |
| A | Cosphaderm® Sodium LAAS | Sodium Anisate (and) Sodium Levulinate | Cospahtec GmbH | 1.00 |
| A | Plantacare® 1200 UP | Lauryl Glucoside | BTC Europe GmbH | 12.00 |
| A | Sulfopon® 1216 G | Sodium Coco-Sulfate | BTC Europe GmbH | 6.00 |
| A | Glycerin 99% | Glycerin | All Organic Treasures | 2.00 |
| B | Amylomer™ CAT 531 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 3.00 |
| B | Bio Worlée Aloe IF 200x FD | Aloe Barbadensis Leaf Juice Powder | Worlee GmbH | 0.05 |
| C | Lamesoft® PO 65 | Coco-Glucoside (and) Glyceryl Oleate | BTC Europe GmbH | 1.00 |
| C | Fragrance – floral fruity | Fragrance | Nöring Naturprodukte GmbH | 0.30 |
| D | Citric Acid | Citric Acid | Caesar & Loretz GmbH | 0.85 |

Processing

- Mix ingredients of phase A in given order and heat up to 60°C until completely dissolved.
 - At max. 45°C mix ingredients of phase B in given order, until everything is homogeneous.
 - Mix phase C together and add to the main mix.
 - Adjust pH with phase D.
- appearance: slightly opaque shower gel
 - pH-value 4.9 – 5.5
 - viscosity 7500 – 17500 mPas
 - proven stability
 - microbiological safety challenge test pass



Silky **Hafencity** Body Lotion

A white body lotion that spreads easily and is quickly absorbed, creating a naturally nourished feeling on the skin.

Our Amylomer™ Care 25 added here is particularly biodegradable and gives a soft and silky feel, both on the skin and hair.

Body Lotion - with Amylomer™ Care 25 1762-0050

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|-----------------------|---|----------------------------|-------|
| A | Water | Aqua | - | 70.84 |
| A | Verstabil® SL non GMO | Sodium Levulinate (and) Potassium Sorbate | Evonik Dr. Straetmans GmbH | 2.00 |
| A | Glycerin 99,5% | Glycerin | Fauth + CO. KG | 4.00 |
| A | Lanette® O | Cetearyl Alcohol | BTC Europe GmbH | 0.30 |
| A | Olivem® 1000 MB | Sorbitan Oliviate | C.H. Erbslöh GmbH & Co. KG | 4.00 |
| A | Neutral Oil | Caprylic/Capric Triglyceride | Nöring Naturprodukte GmbH | 7.00 |
| A | Sheabutter | Butyrospermum Parkii Butter | - | 2.00 |
| A | Dermosoft® GMCY MB | Glyceryl Caprylate | Evonik Dr. Straetmans GmbH | 0.20 |
| A | Sunflower Oil | Helianthus Annuus Seed Oil | All Organic Treasures GmbH | 7.50 |
| A | Xanthan FNCS-PC | Xanthan Gum | Jungbunzlauer GmbH | 0.30 |
| B | Dermofeel® Toco 70 | Helianthus Annuus Seed Oil (and) Tocopherol | Evonik Dr. Straetmans GmbH | 0.50 |
| B | Amylomer™ Care 25 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 1.00 |
| C | Citric Acid | Citric Acid | Verima GmbH | 0.36 |

Processing

- Mix ingredients of phase A in given order and heat up to 80°C until completely dissolved.
 - At max. 45°C mix ingredients of phase B in given order to phase A and homogenized.
 - Adjust pH with phase D.
- appearance: white emulsion
 - pH-value 4.8 – 5.4
 - viscosity 8000 – 17000 mPas
 - proven stability
 - microbiological safety challenge test pass





Sensitive **Eppendorf** Body Lotion

A white body lotion that spreads easily and is quickly absorbed, creating a naturally nourished feeling on the skin.

Our non-ionic conditioning agent Amylomer™ HA-NI added here is particularly mild.

It is therefore highly suited to facial and baby products or to improve the texture of the product.

Body Lotion - with Amylomer™ HA-NI 1762-0040

| PHASE | TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|-------|-----------------------|--|----------------------------|-------|
| A | Water | Aqua | - | 70.84 |
| A | Verstabil® SL non GMO | Sodium Levulinate (and) Potassium Sorbate | Evonik Dr. Straetmans GmbH | 2.00 |
| A | Glycerin 99,5% | Glycerin | Fauth + CO. KG | 4.00 |
| A | Lanette® O | Cetearyl Alcohol | BTC Europe GmbH | 0.30 |
| A | Olivem® 1000 MB | Sorbitan Olivatate | C.H. Erbslöh GmbH & Co. KG | 4.00 |
| A | Neutral Oil | Caprylic/Capric Triglyceride | Nöring Naturprodukte GmbH | 7.00 |
| A | Sheabutter | Butyrospermum Parkii Butter | - | 2.00 |
| A | Dermosoft® GMCY MB | Glyceryl Caprylate | Evonik Dr. Straetmans GmbH | 0.20 |
| A | Sunflower Oil | Helianthus Annuus Seed Oil | All Organic Treasures GmbH | 7.50 |
| A | Xanthan FNCS-PC | Xanthan Gum | Jungbunzlauer GmbH | 0.30 |
| B | Dermofeel® Toco 70 | Helianthus Annuus Seed Oil (and) Tocopherol | Evonik Dr. Straetmans GmbH | 0.50 |
| B | Amylomer™ HA-NI | Sodium Hydroxypropyl Oxidized Starch Succinate | Gräfe Chemie GmbH | 1.00 |
| C | Citric Acid | Citric Acid | Verima GmbH | 0.36 |

Processing

- Mix ingredients of phase A in given order and heat up to 80°C until completely dissolved.
 - appearance: white emulsion
 - pH-value 4.8 – 5.2
- At max. 45°C mix ingredients of phase B in given order to phase A and homogenized.
 - viscosity 4600 – 10400 mPas
 - proven stability
- Adjust pH with phase D.
 - microbiological safety challenge test pass

Effectable yours

Effectable, because ...

- effective – tangible efficacy
- independent – discovery of mutual solutions
- objective – development on the basis of qualified measuring methods
- customised – adaptation of our testing methods and method development to meet requirements
- creative – take advantage of our network of bright minds

Yours, because ...

Together we will find solutions tailored to your needs – because long-term success is only possible through cooperation!

Benefits

- efficacy testing of your hair care products
- documented certification of efficacy, including report
- preparation of claims

Platform of Expertise

Testing of your formulations in our in-house lab:

- synchronised washing station – comparing the sensory properties of hair care products → sensory behavior on the hair
- climate chamber – hair drying and curl retention
- proof ceiling of efficacy: dry combing force and wet combing force





effectableyours

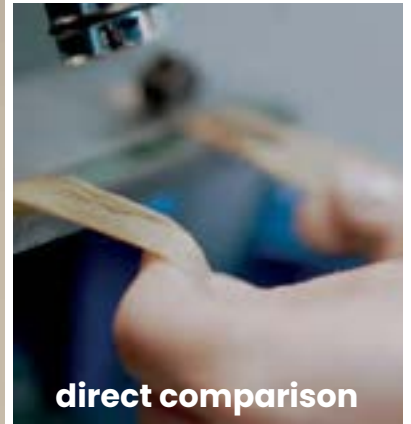


graefe-naturchemie.de

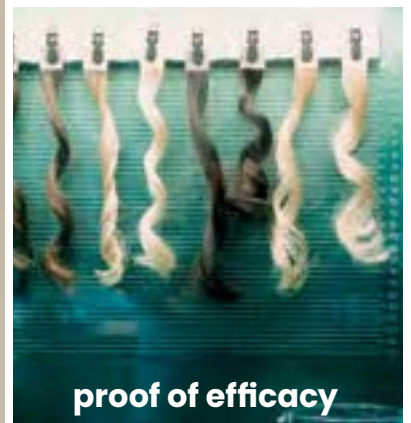
watch
the
video



synchronised
washing station



direct comparison



proof of efficacy



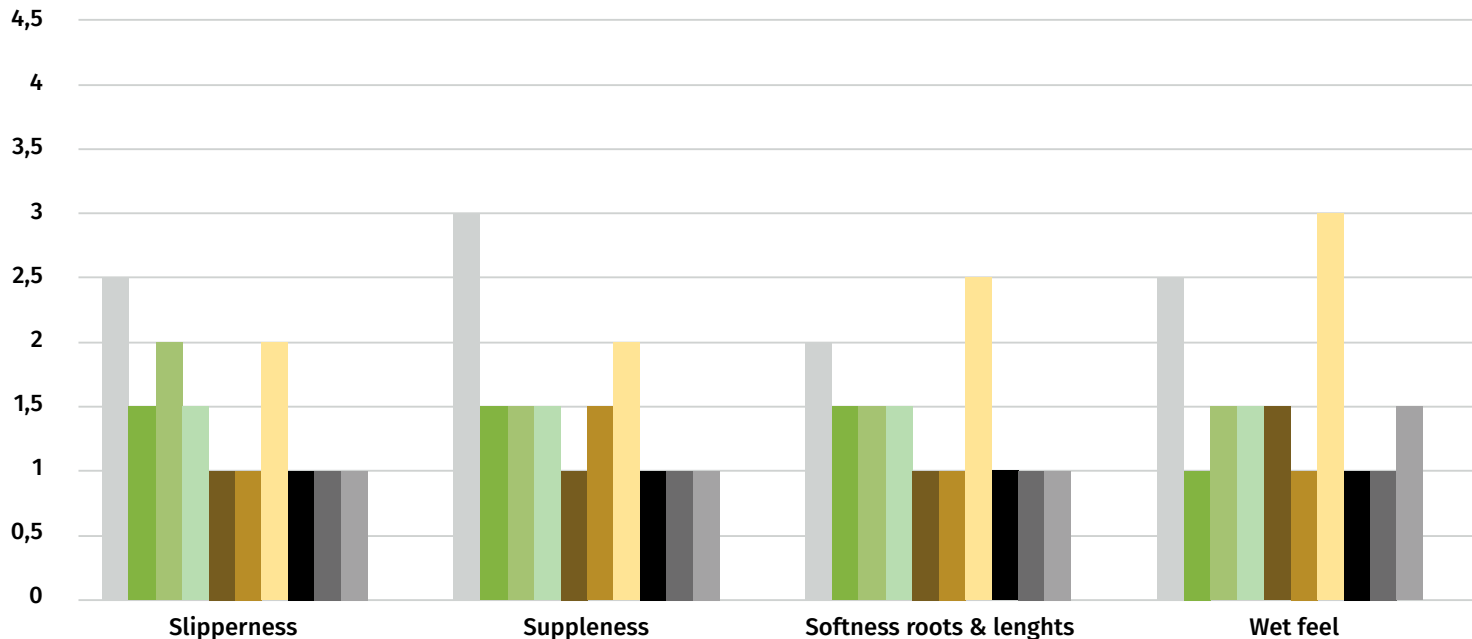
Basis Formulation

We used the following base formulation to test the performance of Amylomer™ products (Curl Retention result see page 36, combing force results see page 37).

Basic Shampoo #B10-001

| TRADE NAME | INCI NAME | SUPPLIER | % W/W |
|--------------------|--|----------------------------|-------|
| Water | Aqua | - | 54.26 |
| Texapon | Sodium Laureth Sulfate | BTC Europe GmbH | 32.14 |
| Dehyton® PK 45 | Cocamidopropyl Betaine | BTC Europe GmbH | 8.10 |
| Dermosoft® 1388 | Glycerin (and) Aqua (and) Sodium Levulinate (and) Sodium Anisate | Evonik Dr. Straetmans GmbH | 3.50 |
| *Amylomer™ CAT 531 | Starch Hydroxypropyltrimonium Chloride | Gräfe Chemie GmbH | 2.00 |

*Our Amylomer™ products offer a wide range of applications for all hair types and even sensitive skin.

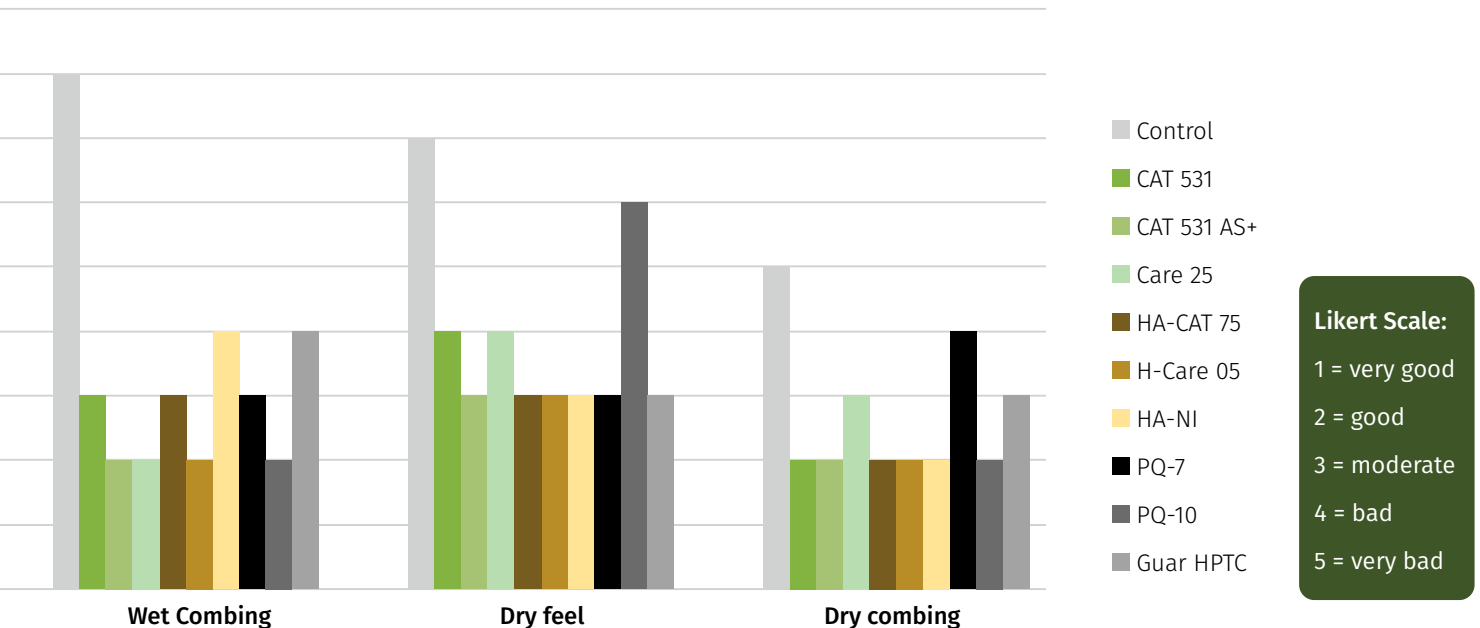


Sensory Properties

The sensorial properties of the test formulations, containing the different conditioners have been evaluated by a panel of hair care experts.

Sensory Parameter

Comparison Amylomer™ products vs. PQ-7, PQ-10 and Guar HPTC with an active ingredient concentration of 0.4%.



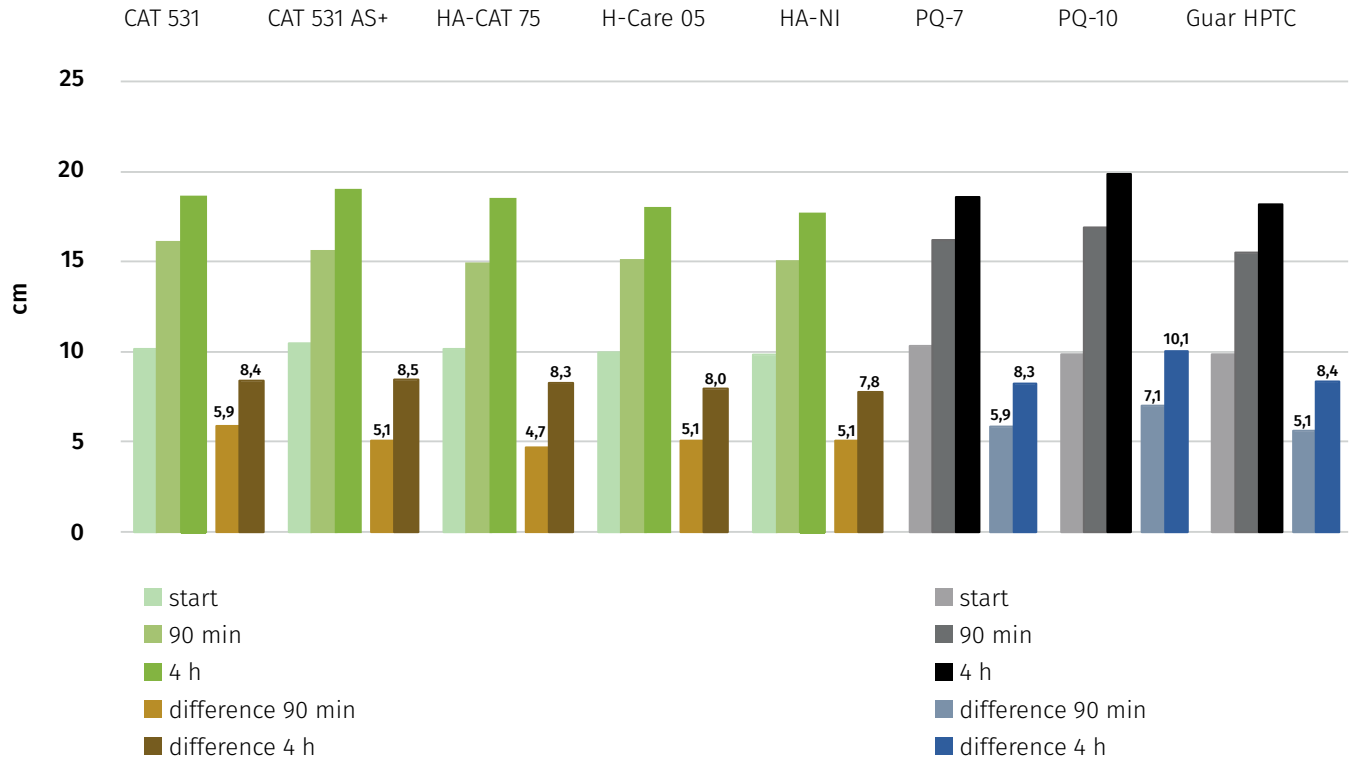


Curl Retention Method

The hair tresses are treated under standardised conditions (temperature, humidity) with the products to be tested and formed into curls with the help of rollers. The curls are then placed in a warm and humid climate in our climate chamber in order to subjectively measure the length expansion of the curl at the beginning of the measurement as well as after different points in time.

Curl Retention

Comparison Amylomer™ products vs. PQ-7, PQ-10 and Guar HPTC with an active ingredient concentration of 0.4%.



Combing Force Measurements

The hair tresses are pre-conditioned to ensure that the hair is exposed to the same conditions. After drying (24 hours in the climate chamber), the measurement is carried out on our combing force machine with the product. For this, the hair tresses are treated five times with a foam and rinsing phase.

Combing Force

Comparison Amylomer™ products vs. PQ-7, PQ-10 and Guar HPTC with an active ingredient concentration of 0.4%.



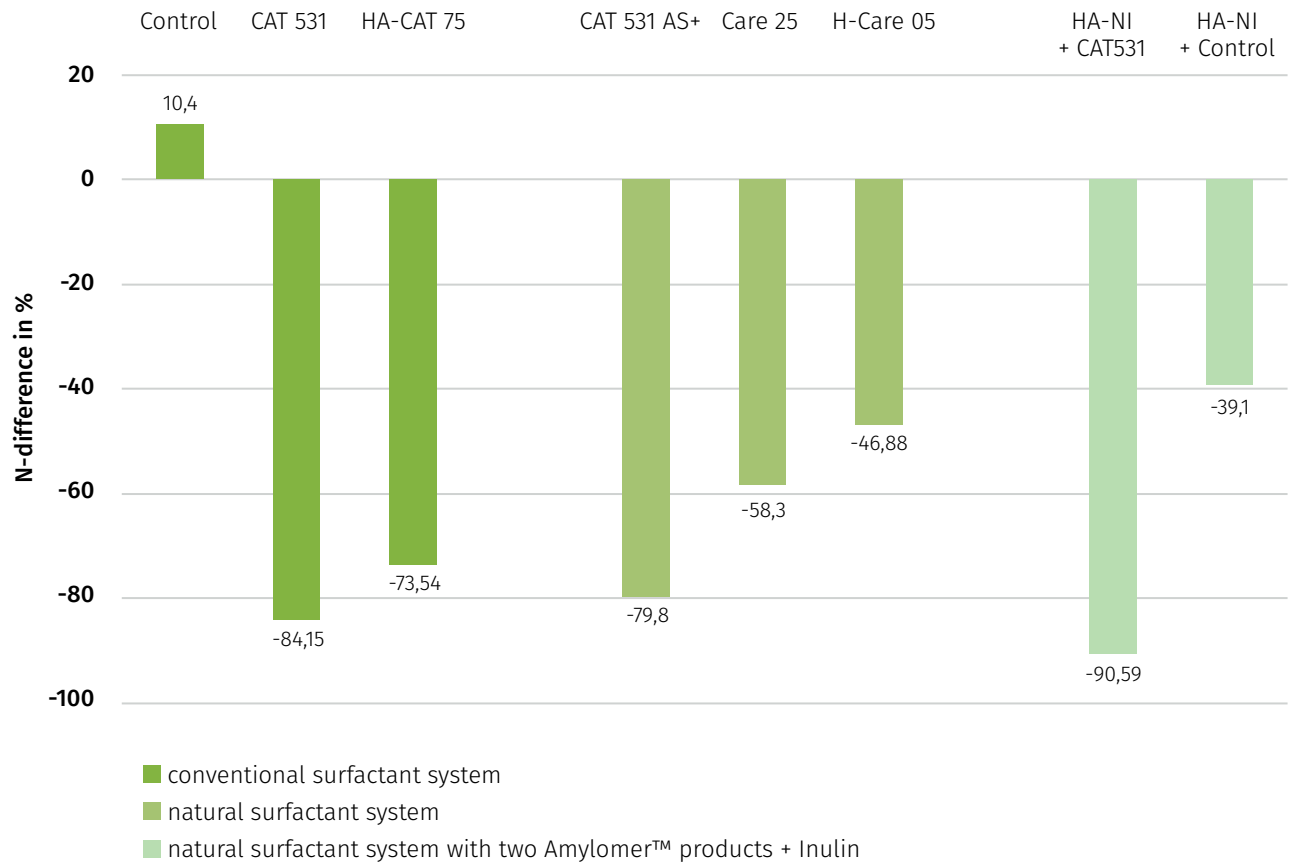


Combing Force Measurements

The results of the combing force measurements in the shampoos with conventional and natural surfactant systems (pages 23-25) are shown below.

Combing Force

Comparison different surfactant systems with Amylomer™ products.



Simply let us know

Looking to change the raw materials in your cosmetic formulation? Looking to get your product efficacy and claims tested and accurately certified?



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**WE WOULD BE DELIGHTED TO PROVIDE YOU WITH
DOCUMENTATION AND/OR SAMPLES.**



GRÄFECHEMIE

ADDITIVES FROM PLANT-BASED RAW MATERIALS

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