

UCARE™ Extreme Polymer

Go beyond conditioning with our new bio-derived & biodegradable cellulose technology



There is no denial, consumers want haircare products that improve the look of their hair and at the same time have a positive impact on the environment. In other words, they want the best of both worlds.

With UCARE™ Extreme Polymer, a revolution in conditioning performance, you can do just that. This versatile bio-based and biodegradable polymer* (48% of bio-based carbon content) has superior conditioning results in conditioners, leave-on products and shampoos. The performance even matches some silicones, especially on damaged hair.

The water soluble polymer has a cellulosic backbone, derived from GMO-free and PEFC** certified wood pulp.

This innovative polymer can be used as the principal conditioning agent in rinse-off conditioners, leave-on products and shampoos. It also can be used in combination with silicones to enhance deposition in shampoos and conditioners.

Say hello to new sustainable formulas for conditioners, leave-on and shampoos with no compromise on performance.

*Inherent primary biodegradability with pre-adaptation according to OECD test(s) guidelines (reaches > 20% biodegradation in OECD test(s))

**Programme for Endorsement of Forest Certification (PEFC)

UCARE™ Extreme Polymer *Don't compromise... get the next level of conditioning performance*

- INCI name: Polyquaternium-10

Benefits for formulators:

- High weight efficiency – low use level
- Improves natural content in formula
- Soluble in water
- Viscosity enhancer
- Salt tolerant
- Good compatibility with broad range of surfactants and thickeners
- Allows versatility in formulation format
- Enables clear products
- Listed in the Catalogue of Cosmetic Ingredients in China

In application – consumer benefits:

For rinse-off conditioners

- No compromise on performance – it can feel like a silicone on wet/dry hair (reduction in combing force especially for damaged hair)
- Reduces hair breakage
- Restores hydrophobicity - healthy hair
- Improves hair manageability & enables extreme alignment

For leave-in conditioners

- Provides natural soft styling (i.e., curl retention)
- Conditioning (reduction in combing force)

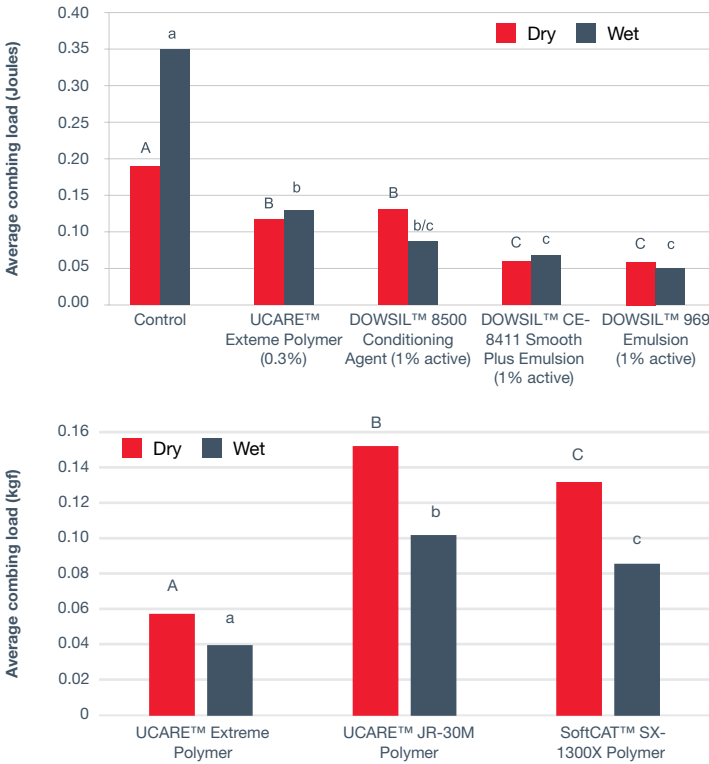
For shampoos

- Versatility in conditioning (with or without silicones)

Rinse-off conditioners

Figure 1: Enhanced combability

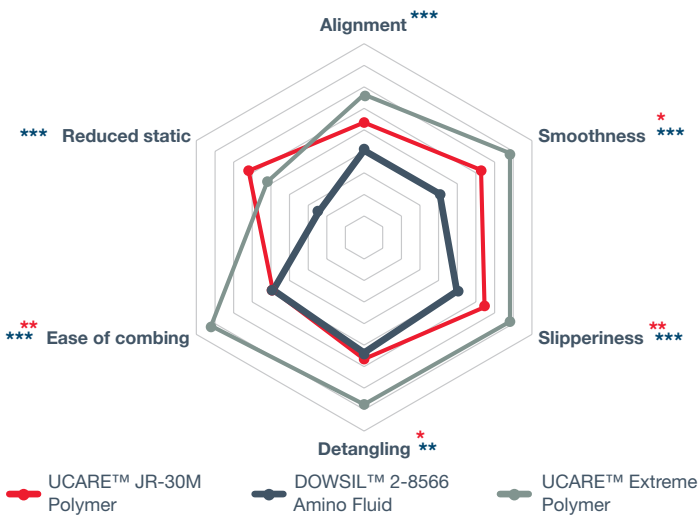
UCARE™ Extreme Polymer provides good conditioning performances on damaged hair, achieving close performances to aminosilicones with three times less active level of product.



Treatment: 0.4 g / g hair on bleached Caucasian hair, 0.3% cationic polymer or 1% active silicone
 Measured using Diastron MTT175 or Instron tensile tester
Statistics: Different letters show a statistical difference at 95% confidence

Figure 2: Improved sensory

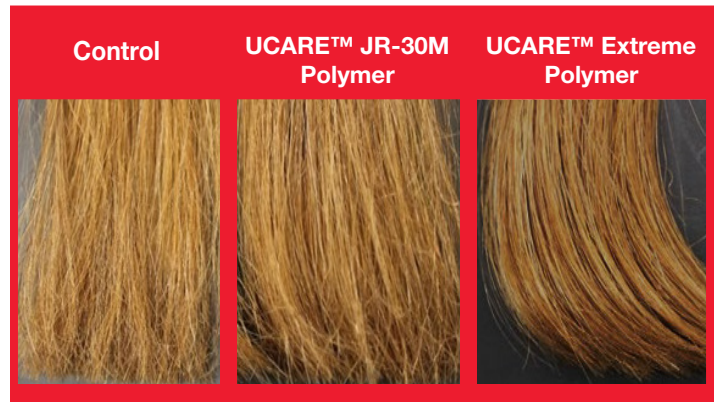
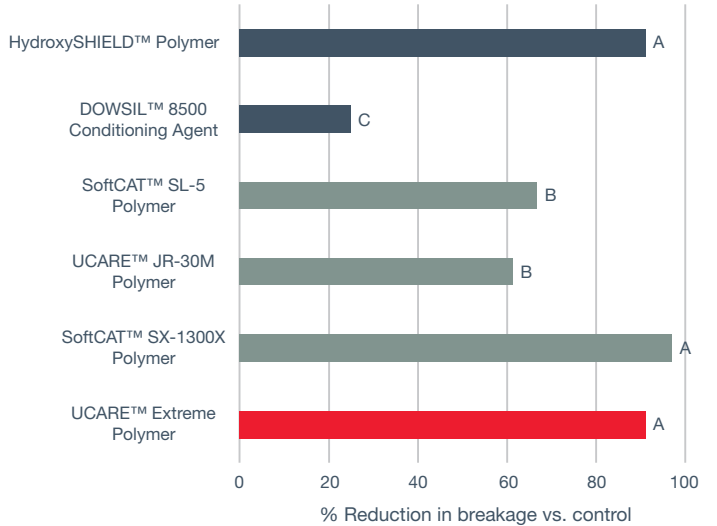
UCARE™ Extreme Polymer provides better feel and dry combing compared to amodimethicone and cationic polymer benchmarks.



Treatment: 0.4 g / g hair on bleached Caucasian hair, 0.3% cationic polymer or 1% active silicone
 Sensory Panel # Participants: 20
Statistics: Significant difference at *** ≥99.9%; ** ≥99%; * ≥95%
Blue *: Statistical difference between UCARE™ Extreme Polymer and DOWSIL™ 2-8566 Amino Fluid
Red *: Statistical difference between UCARE™ Extreme Polymer and UCARE™ JR-30M Polymer

Figure 3: Reduced breakage

UCARE™ Extreme Polymer provides up to 90% reduced breakage compared to the control, 66% compared to DOWSIL™ 8500 Conditioning Agent and 30% compared to UCARE™ JR-30M Polymer.



Treatment: 0.4 g / g hair on bleached Caucasian hair, 0.3% cationic polymer or 1% active silicone
Method: measured using repeated combing instrument; 3 tresses/product; 10,000 comb strokes; speed: 20 cycles/min (80 comb strokes/tress/min); broken hair fibers weighed and % reduction calculated
Control: conditioner without silicone

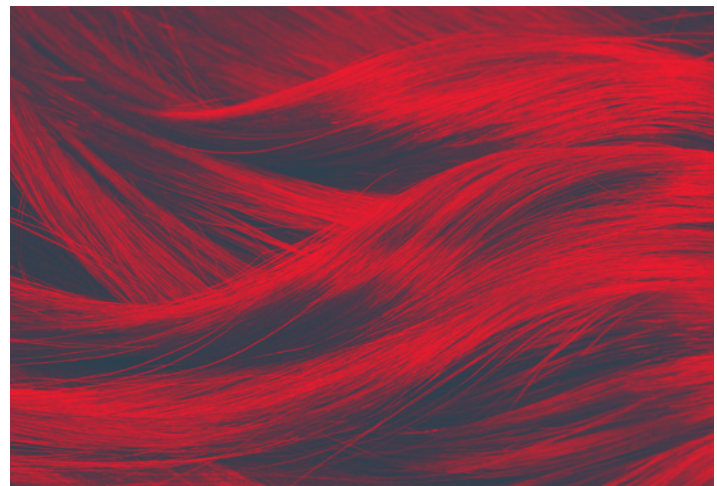
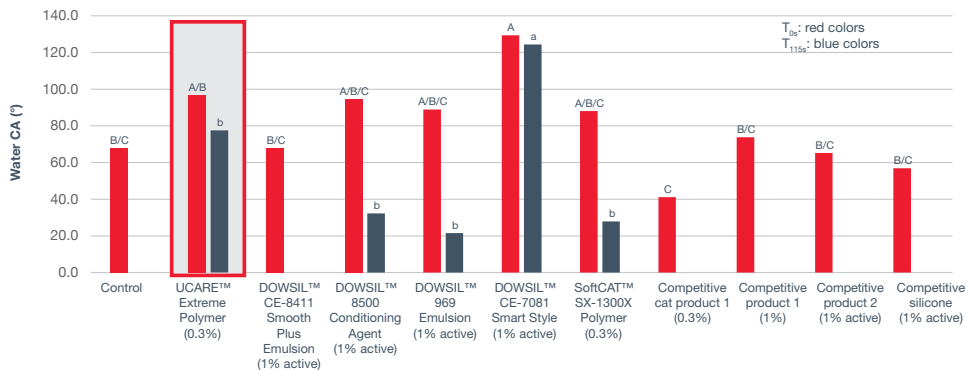


Figure 4: Restored hydrophobicity

Hair treated with UCARE™ Extreme Polymer retains a high degree of hydrophobicity. The higher the contact angle, the more hydrophobic, the healthier the hair.



Treatment: 0.4 g / g hair on bleached Caucasian hair, 0.3% cationic polymer or 1% active silicone

Control: conditioner without silicone or cationic polymers

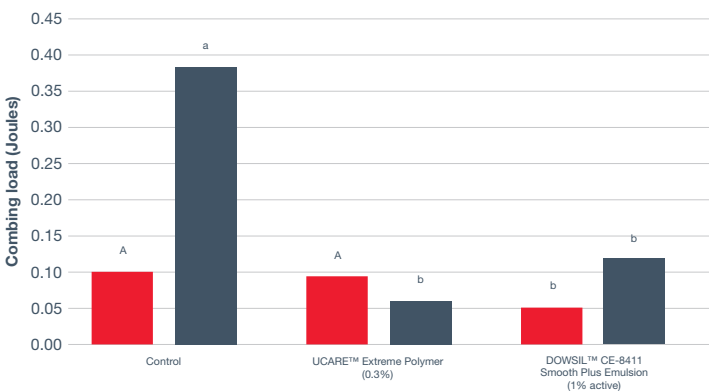
Test conditions: 30 µL of water on bleached Caucasian hair treated with different types of cellulose or silicones; picture taken immediately

Competitive cat product 1	Guar Hydroxypropyltrimonium Chloride
Competitive product 1	Hydrolyzed Wheat Protein
Competitive product 2	Orbignya Speciosa Kernel Oil (and) Hydrogenated Soybean Oil (and) Cocos Nucifera (Coconut) Oil (and) Linum Usitatissimum(Linseed) Seed Oil
Competitive product 3	Amodimethicone/ Morpholinomethyl Silsesquioxane Copolymer (and) Trideceth-5 (and) Glycerin

Leave-on conditioners

Figure 5: Enhanced combability

UCARE™ Extreme Polymer provides similar wet combing performance to aminosilicone benchmark.



Treatment: 0.1 g / g hair on bleached Caucasian hair, 0.3% cationic polymer or 1% active silicone

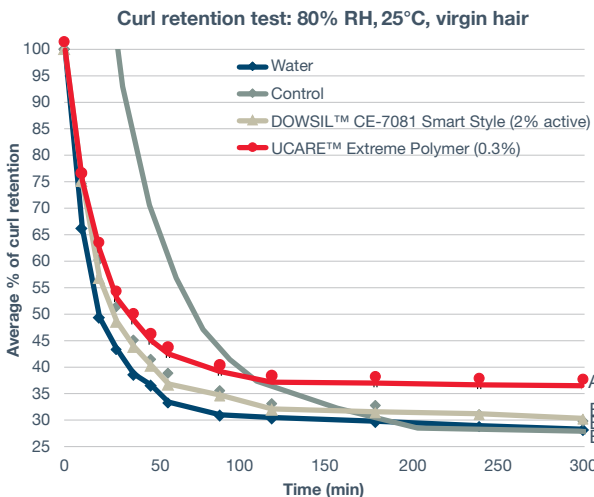
Measured using Diastron MTT175

Control: conditioner without silicone or cationic polymer

Statistics: Different letters show a statistical difference at 95% confidence

Figure 6: Improved curl retention

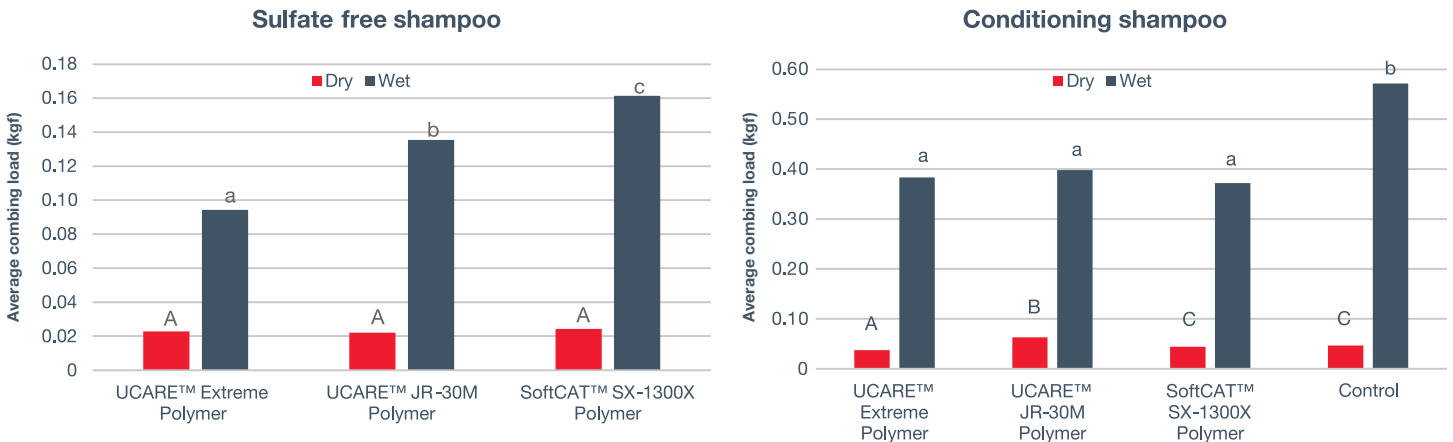
UCARE™ Extreme Polymer provides better curl retention compared to the control, untreated hair, and DOWSIL™ CE-7081 Smart Style with six times less active level of product, translating into natural and soft styling.



Shampoos

Figure 7: Enhanced combability

UCARE™ Extreme Polymer provides dry and wet combability in different shampoo chassis, including clear formulations.



Treatment: 0.4 g / g hair on bleached Caucasian hair, shampoo containing 0.3% cationic polymer
Measured using Instron tensile tester

Control: Conditioner without silicone or cationic polymer

Statistics: Different letters show a statistical difference at 95% confidence

Need more information?

Dow has extensive experience with hair care, beauty and personal care solutions. Leverage our expertise to help you determine which materials are best suited to your application. Simply visit [dow.com/haircare](https://www.dow.com/haircare) to learn how we can help you bring performance and processability to your products.

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