



Mastering Modern Hair Care

Formulate for the Trends that Matter: Part 1

Presented by

Renata Butikas, Kumaran Letchmanan &
Fernando Robles

July 10, 2025

Agenda

Objectives

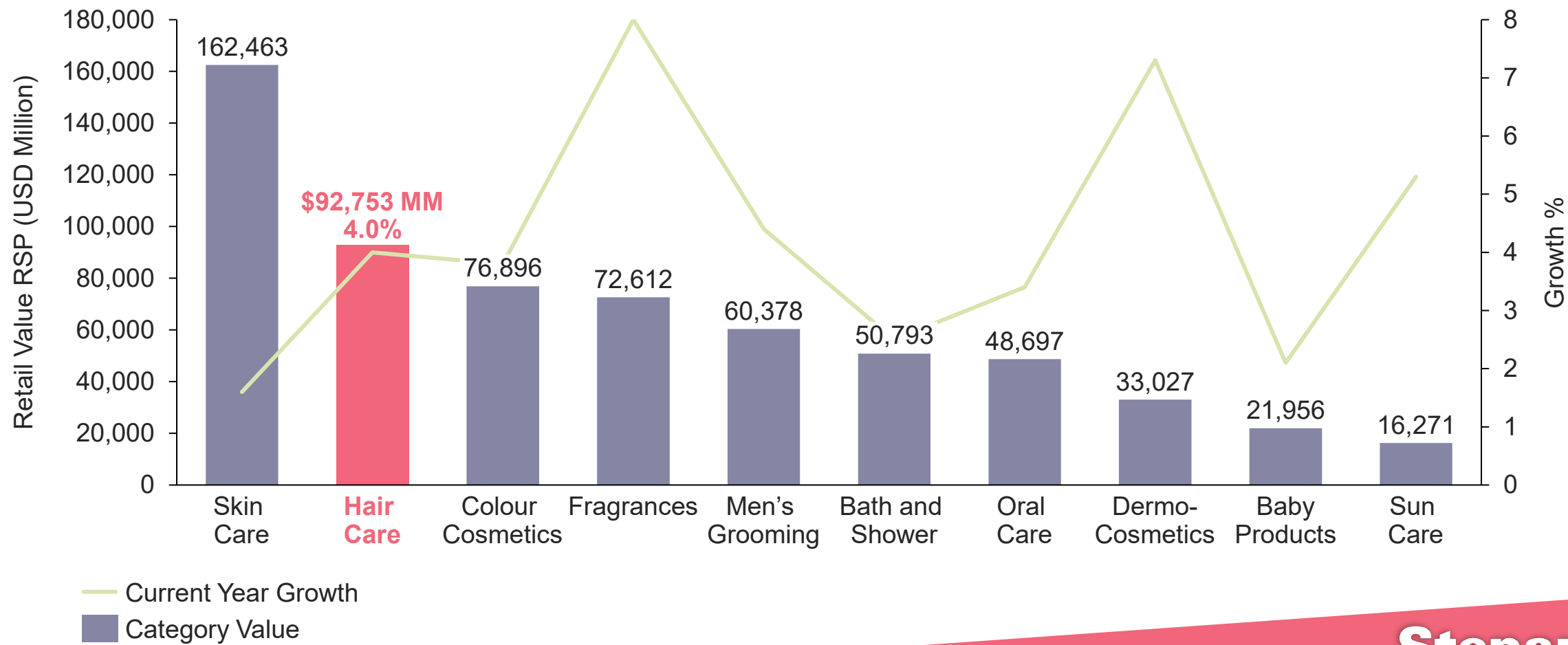
- 1 Global hair care market dynamics
 - 2 Popular shampoo claims
 - 3 Strategies for aligning product development with consumer needs
-
-  Market Insights
 -  Science-Backed Substantiation
 -  Empowering Formulation



Exploring the world of modern hair care

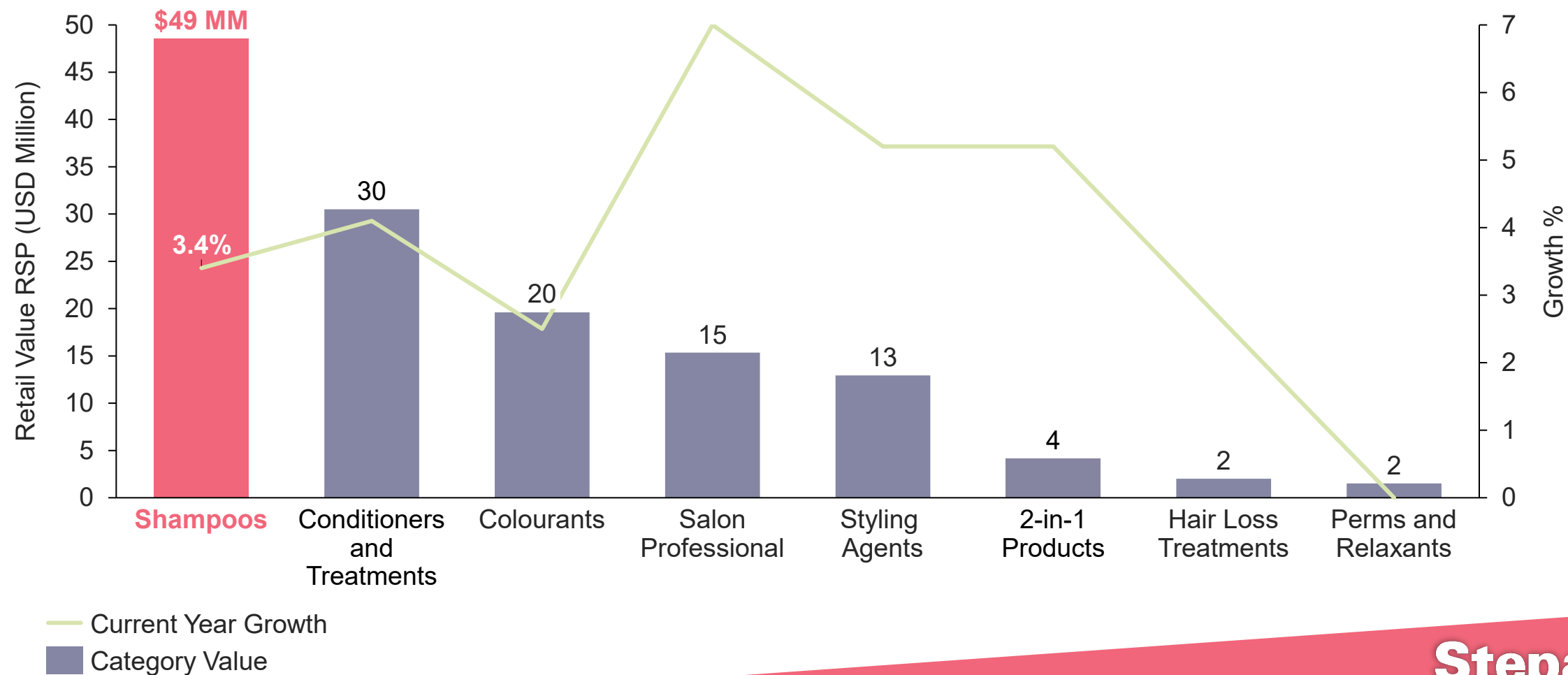
Second to none (well, almost): global hair care is growing

Global Sales of Beauty and Personal Care by Category
Euromonitor 2025



Shampoo reigns supreme in the hair care hierarchy

Global Sales of Hair Care by Segment
Euromonitor 2025



Trends shifting to new era of hair care: Smart & Personal



Skinification

Adopting skincare ingredients, formats, and claims



Personalization & Efficacy

Tailored solutions with data-backed claims

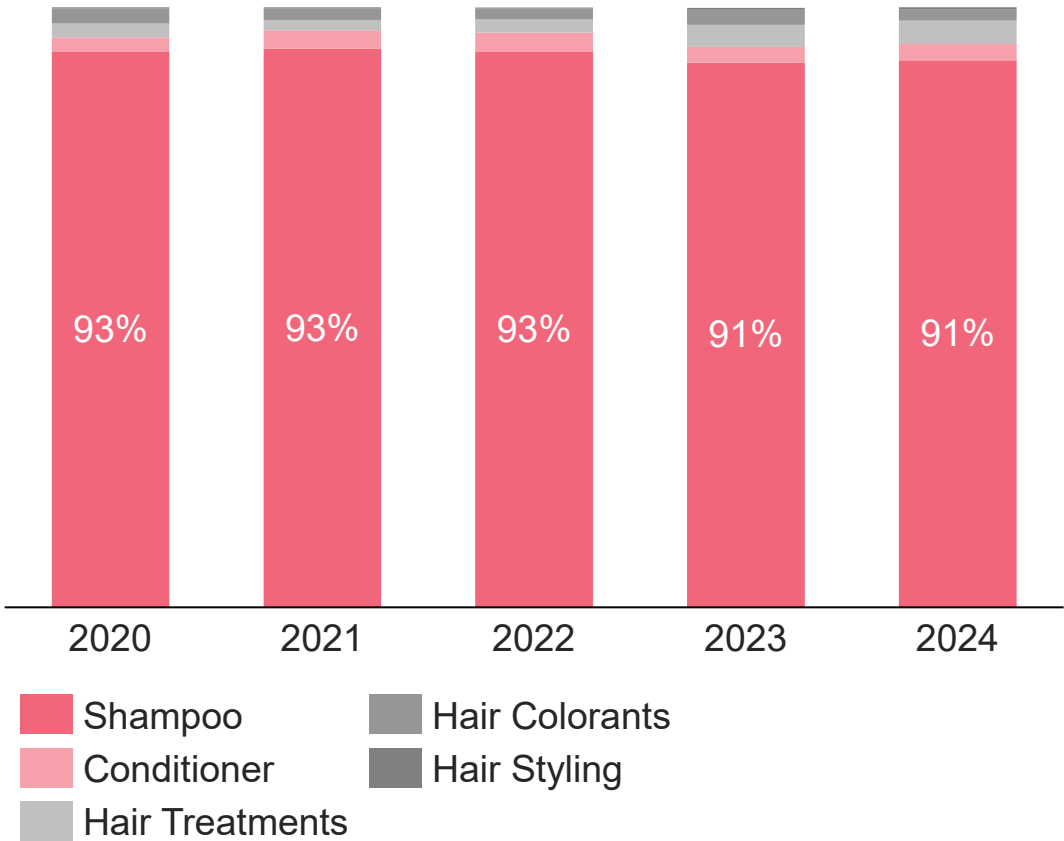


Premiumization

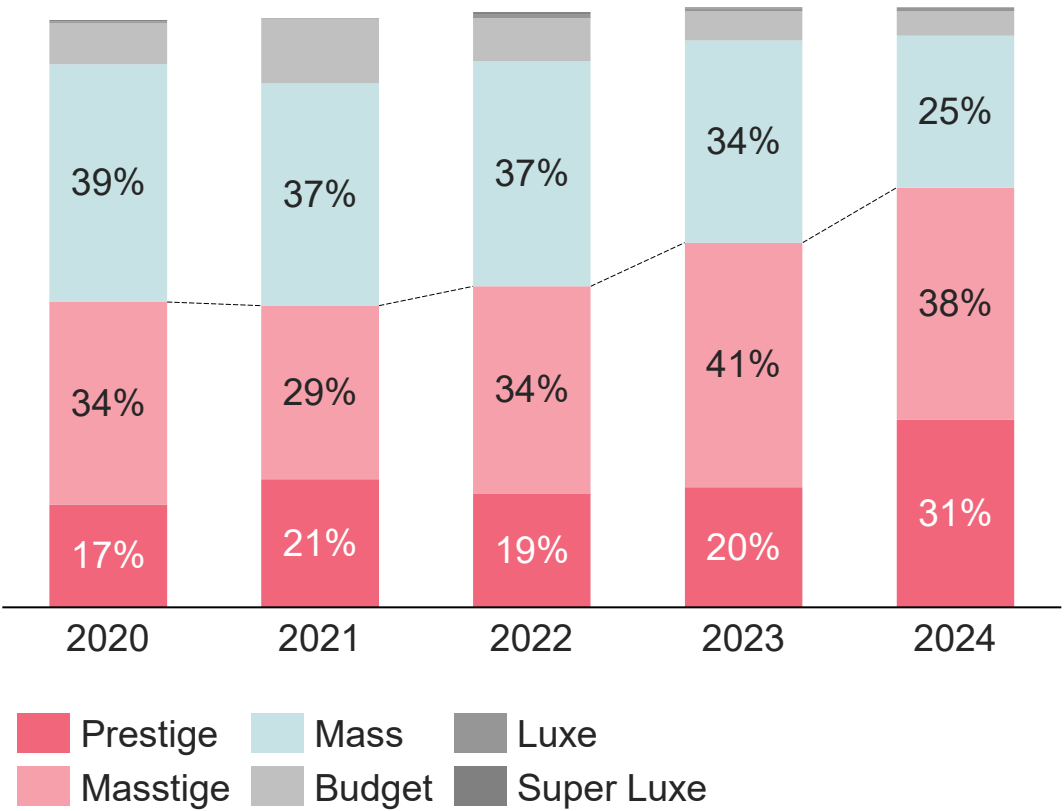
Willingness to invest in hair health and self-care

Shampoos dominate new launches with Premium growing

>6,500 Global New Hair Products Launches
Mintel GNPD 2025



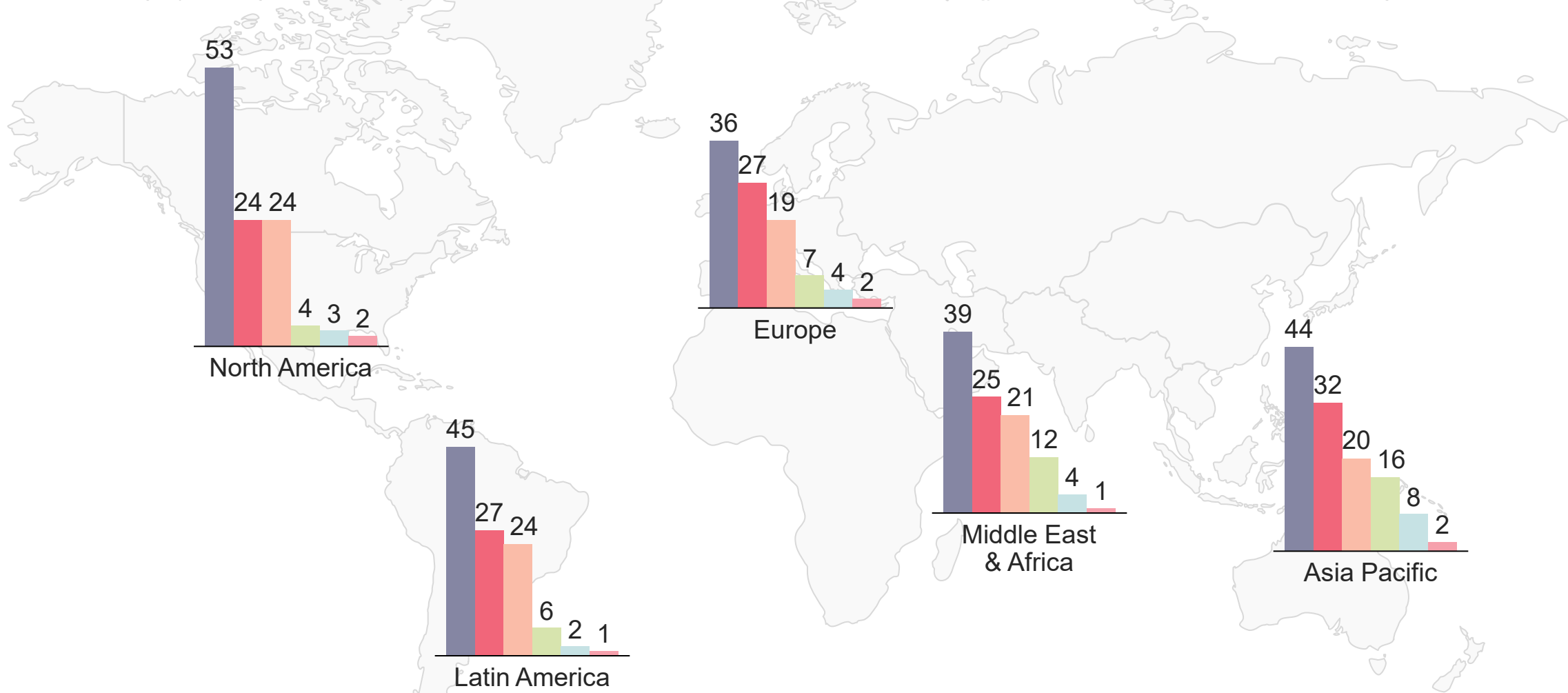
Prestige and Masstige Launches Overtake Mass
Mintel GNPD 2025



New = product, variety/range extension, formulation

New launches are bursting with countless claims

Moisturizing/hydrating Damaged hair Vitamin/mineral fortified Anti-dandruff Anti-hairloss Exfoliating



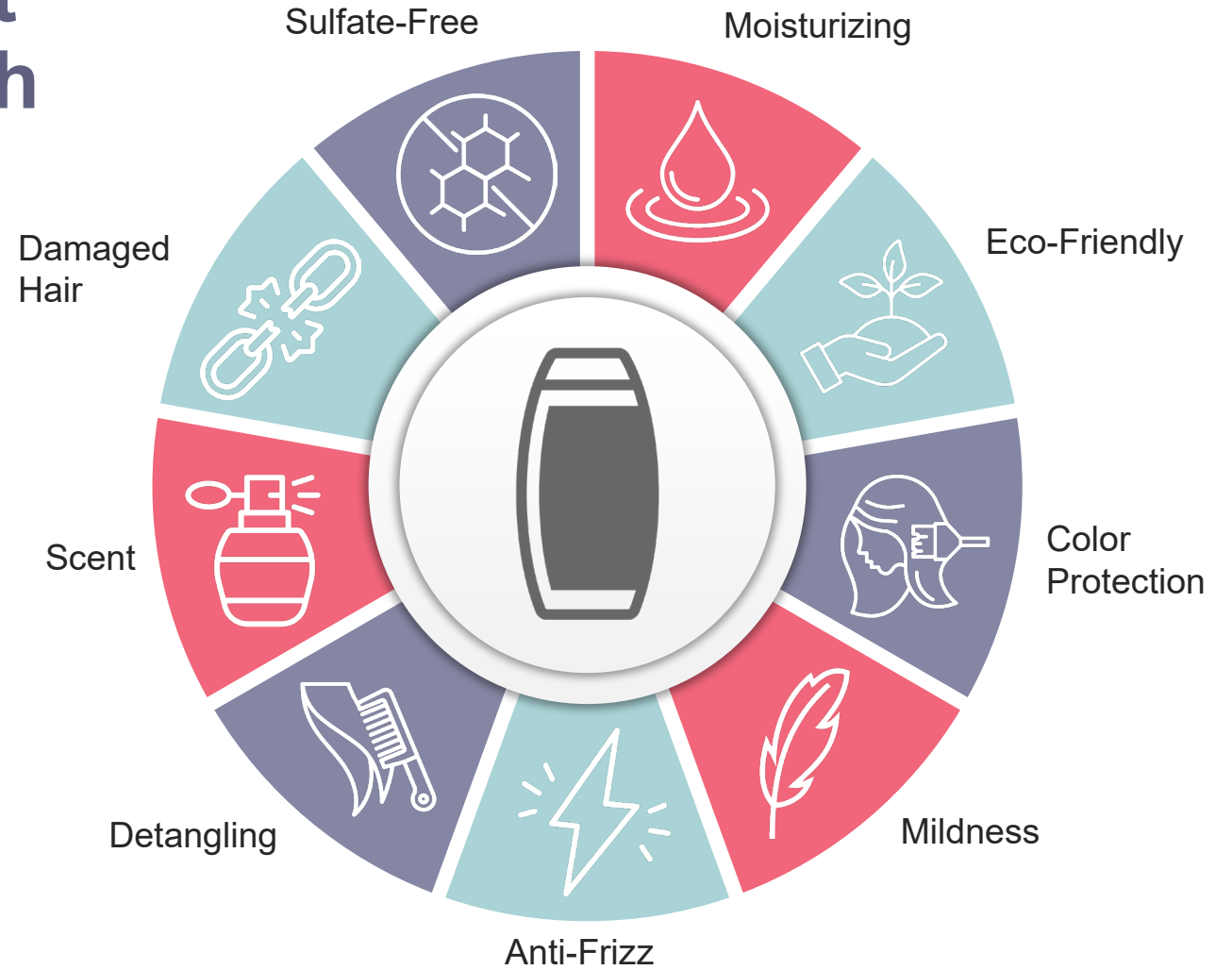
% of Top Claims in Global New Hair Products Launches
Mintel GNPD 2025

Pop-Up

Poll #1

- How many new shampoo launches are you working on this year?
 - A. 1 – 2
 - B. 3 – 5
 - C. More than 5!
 - D. None, we're working on something else

Formulators are challenged with crafting shampoos that satisfy every consumer wish

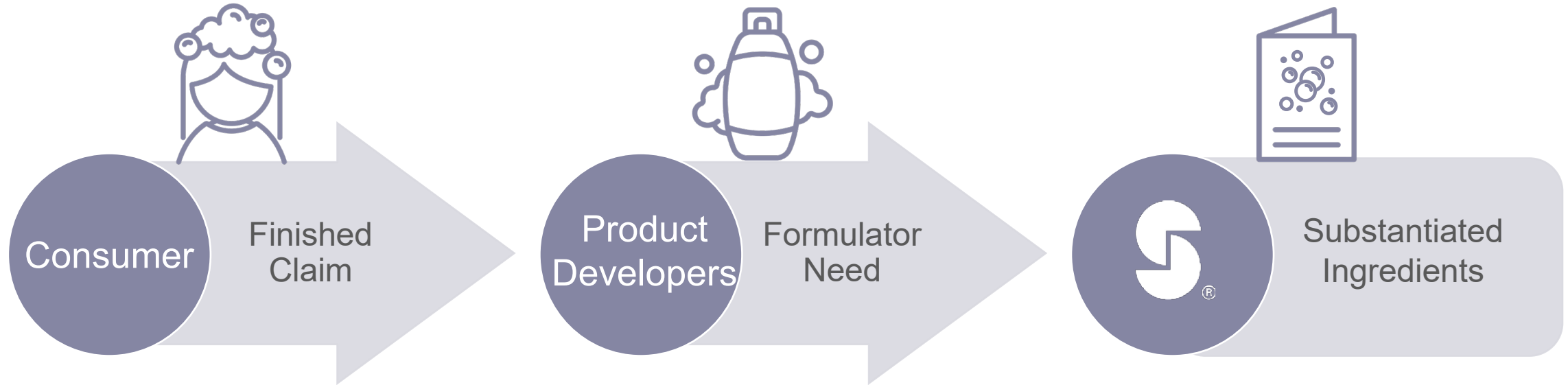


Pop-Up

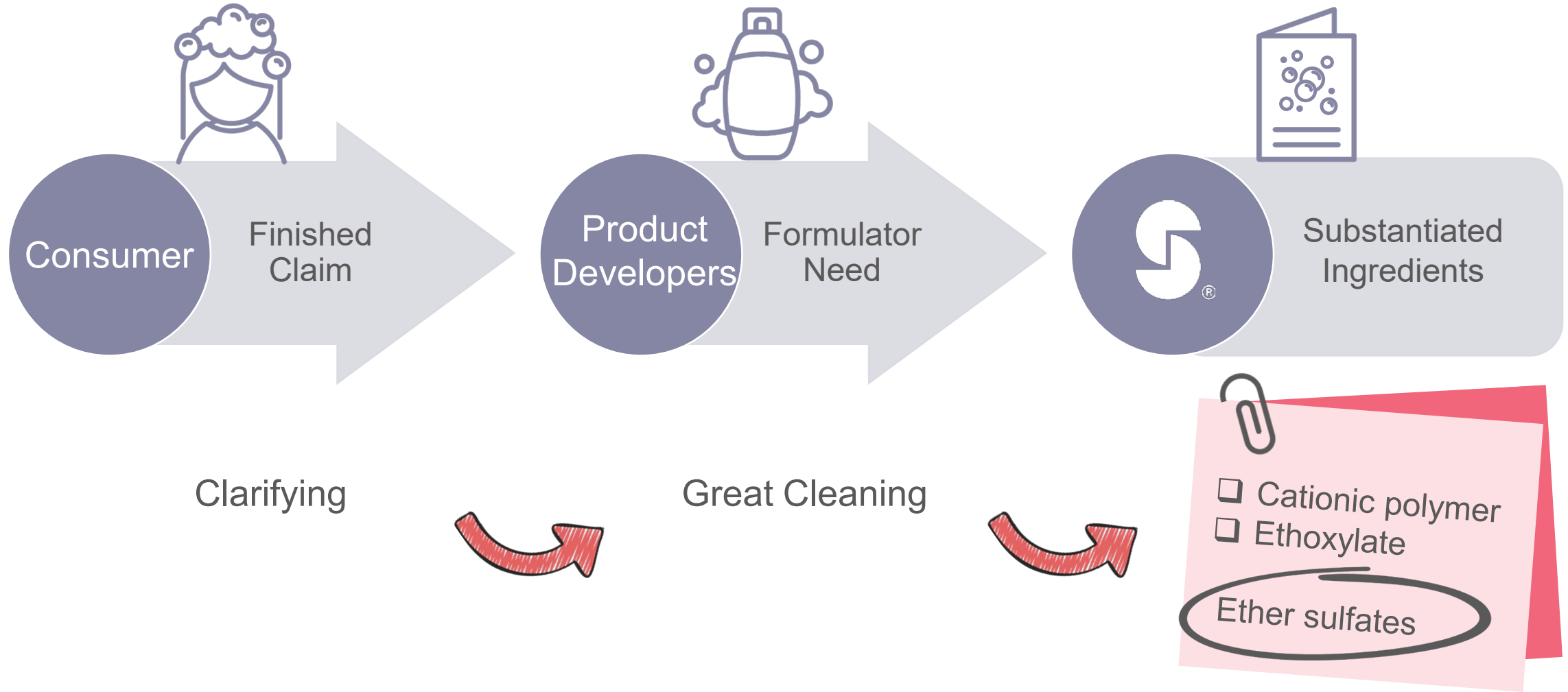
Poll #2

- What are your most challenging shampoo claims to formulate for?
 - A. Moisturizing
 - B. Anti-frizz
 - C. Color protecting
 - D. Detangling
 - E. Hair breakage
 - F. Other

Transform your shampoo game with Stepan's proven formulation techniques and substantiation



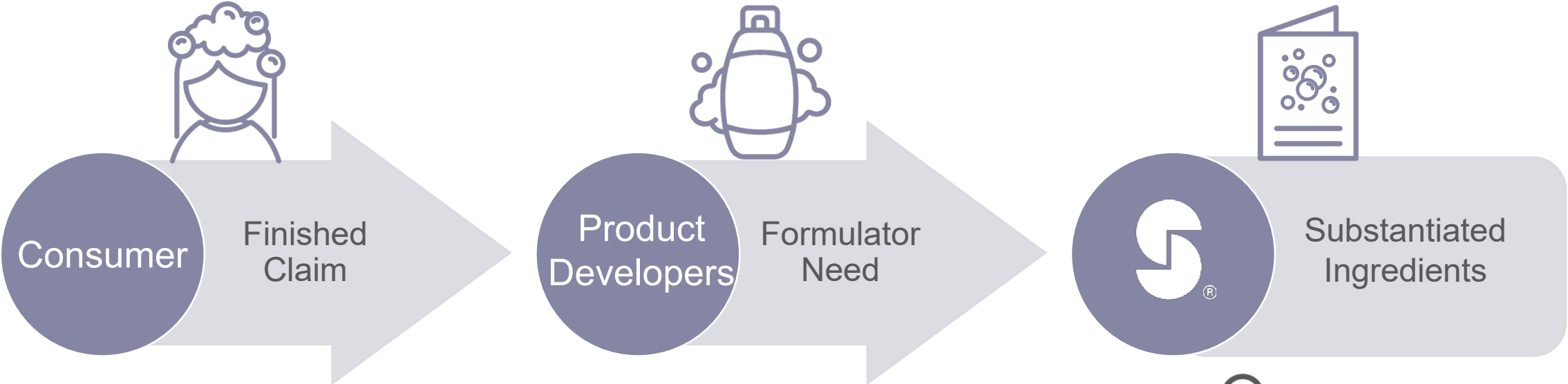
Transform your shampoo game with Stepan's proven formulation techniques and substantiation





Formulating for Moisturizing, Anti-Static & Damaged Hair

Formulating for top shampoo claims



Damaged Hair
Moisturizing
Anti-Static



Hair Breakage
Moisture Retention
Static Reduction



- ☐ Ether sulfate
- ☐ Ammonium sulfate

ALPHA-STEP PC-48

The clever chemistry behind ALPHA-STEP PC-48

INCI Name

Sodium Methyl 2-Sulfolaurate
(and) Disodium 2-Sulfolaurate

Appearance

Clear, light-yellow liquid

Actives

37-40%



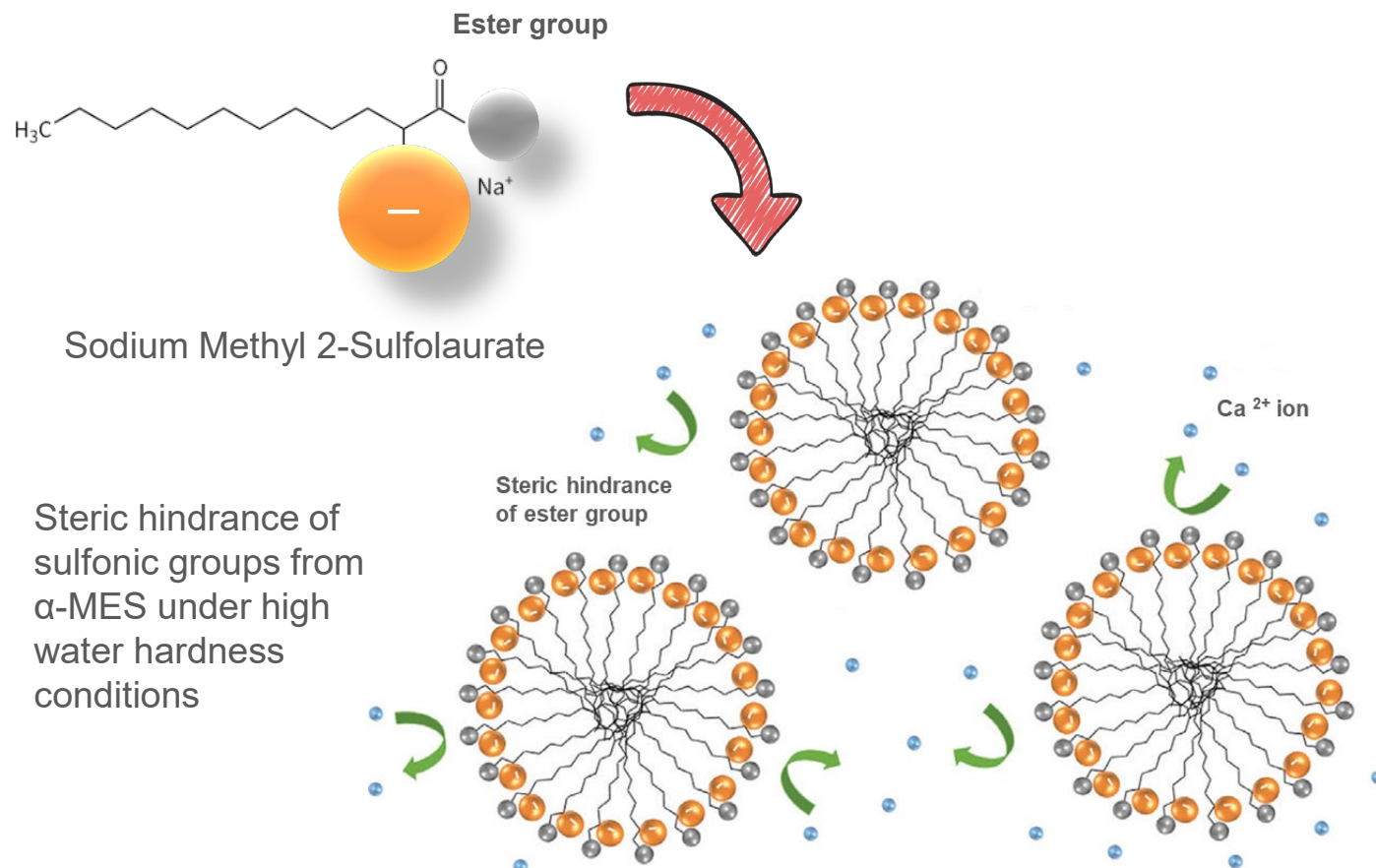
Light, fluffy and flash foam
Rinses cleanly and easily



94% Bio-based
Readily biodegradable



Excellent hard water tolerance
CleanGredients® listed



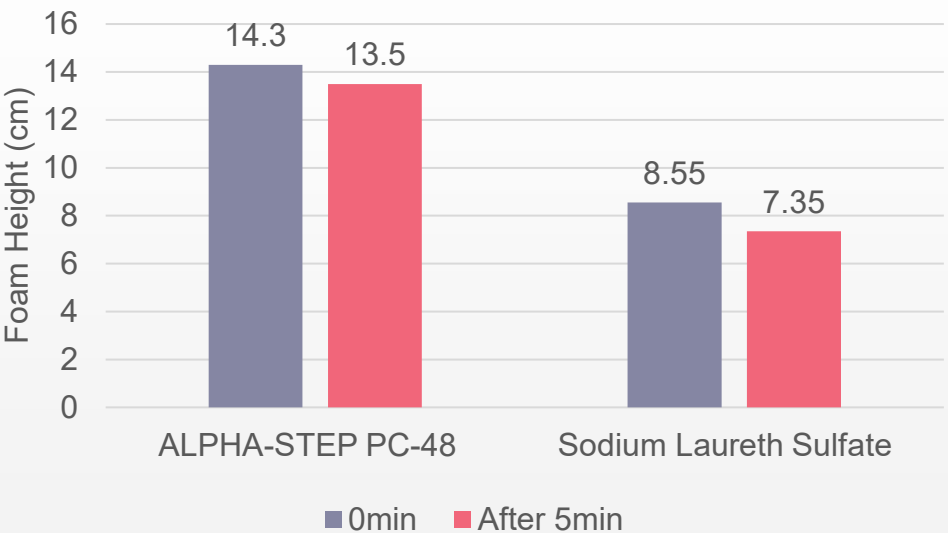
Source: Lim, Y. S., Baharudin, N. B., & Ung, Y. W. (2018). Methyl ester sulfonate: A high-performance surfactant capable of reducing builders dosage in detergents. Journal of Surfactants and Detergents. <https://doi.org/10.1002/jsde.12230>

Hard water tolerance made easy for formulation flexibility

Foam Volume & Longevity



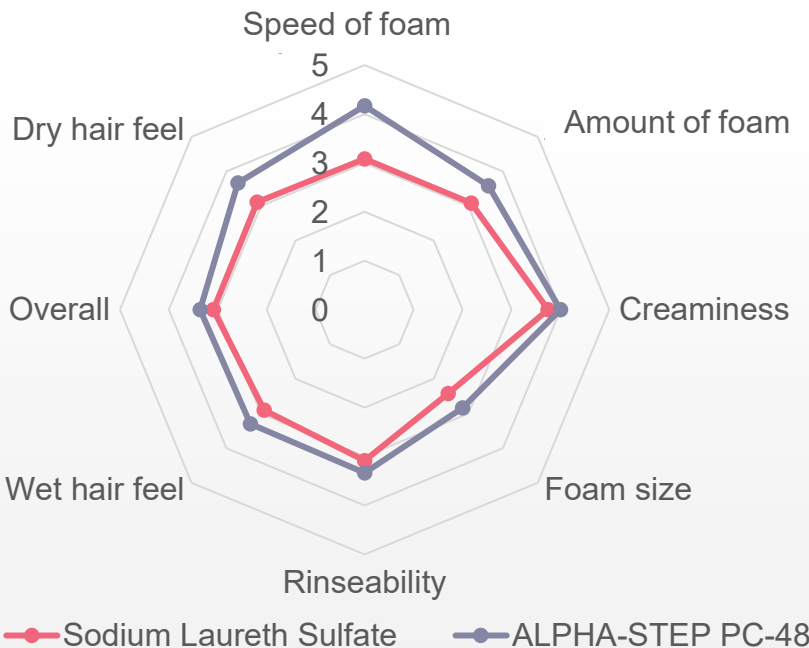
ALPHA-STEP PC-48 demonstrates significantly higher foaming compared to Sodium Laureth Sulfate in 3,000 ppm hard water.



Feel & Foam Appearance



ALPHA-STEP PC-48 improves overall feel and speed of foam compared to Sodium Laureth Sulfate in 1,000 ppm hard water.



Ross-Miles Foam Tester with 0.2% active solution at 25°C was used for the foam test.
Sensory evaluation was conducted with 10 panelists on hair tresses washed using 0.5mL of sample.
Shampoo formulas: 10% active anionic surfactant, 5% active cocamidopropyl betaine.



Pop-Up

Video #1

Stepan 
Personal Care

Experience light, fluffy, and lots of flash foam with Stepan's **ALPHA-STEP® PC-48**

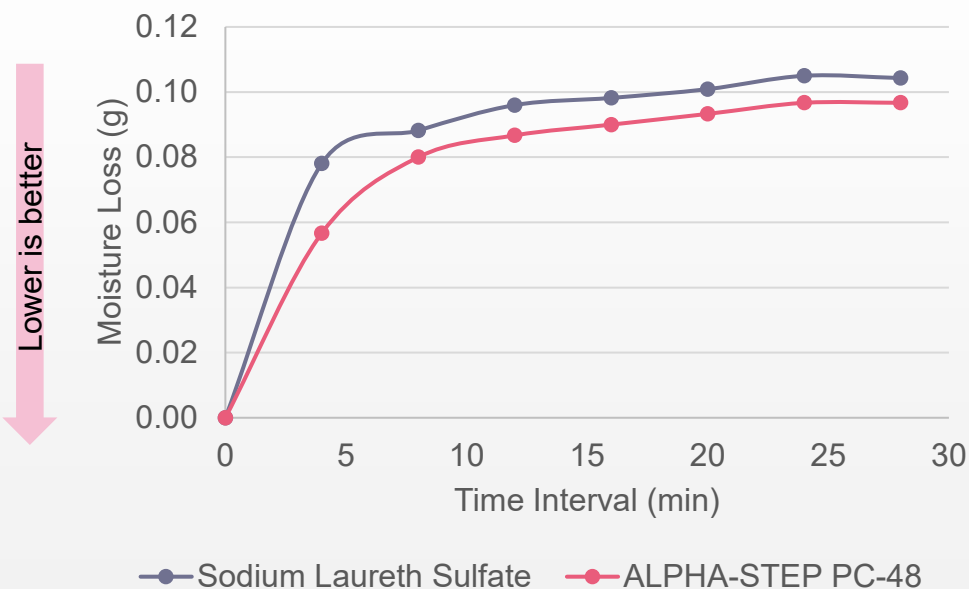


Check off hydration and anti-static hair claims

Moisture Retention



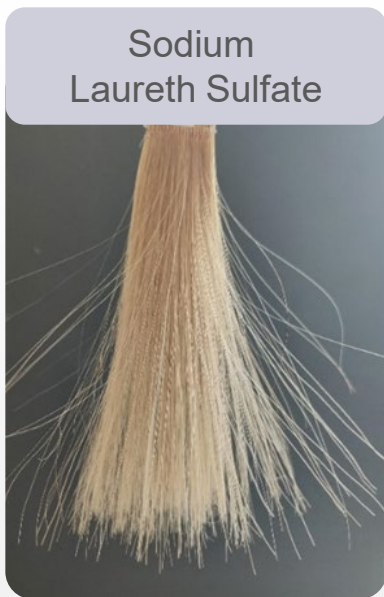
ALPHA-STEP PC-48 demonstrates significantly less moisture loss compared to Sodium Laureth Sulfate, making it an ideal choice for formulators seeking superior hydration benefits.



Static Reduction



ALPHA-STEP PC-48 exhibits lower hair static compared to Sodium Laureth Sulfate, perfect for shampoo formulators making anti-static claims.



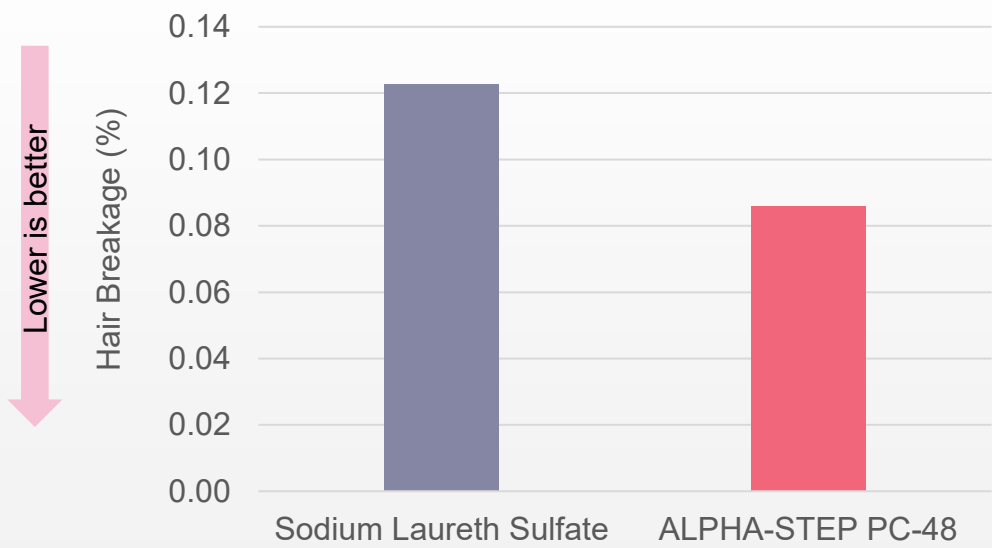
Hair tresses washed under 1,000 ppm hard water for 10 cycles (1 cycle: wetting-shampooing-rinsing-drying). Treated hair tresses dried overnight at 25 °C .
Initial weight of tress was recorded and compared to the final weight after specific time in 45 °C oven.
Shampoo formulas: 10% active surfactant, 5% active Cocamidopropyl Betaine, 1% conditioning agent.

Damaged hair care routines are worry-free

Hair Breakage by Flat Ironing



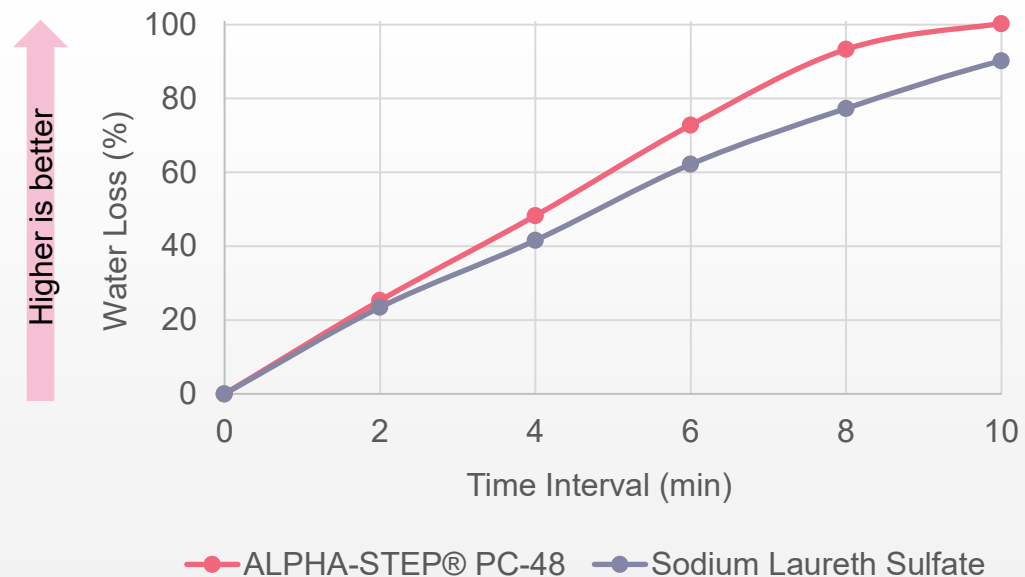
ALPHA-STEP PC-48 results in lesser hair breakage compared to Sodium Laureth Sulfate, making it a gentler alternative for shampoo formulations.



Hydrophobicity by Blow Drying



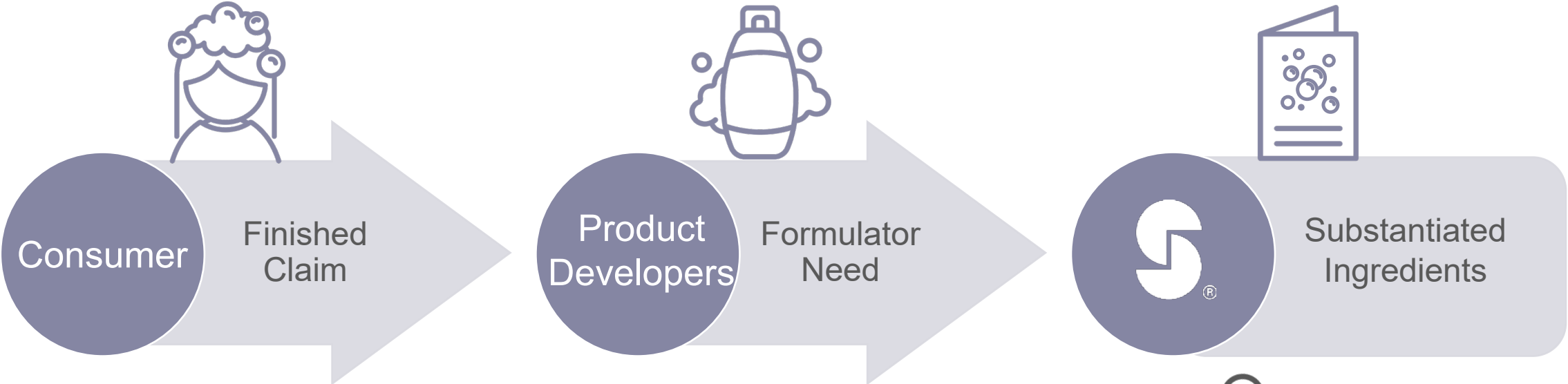
ALPHA-STEP PC-48 exhibits a faster drying rate compared to Sodium Laureth Sulfate, enhancing the overall efficiency of hair care routines.



Hair tresses washed under 1,000 ppm hard water for 10 cycles (1 cycle: wetting-shampooing-rinsing-drying). Treated hair tresses were dried overnight at 25 °C.
Hair breakage: Treated hair tresses flat ironed at 230°C for 20 times and vigorously combed for 50 times.
Hydrophobicity: Wet hair tress positioned 15 cm away from hair dryer, weight measured at 2-minute interval upon drying.
Shampoo formulas: 10% active surfactant, 5% active Cocamidopropyl Betaine, 1% conditioning agent.



Formulating for top shampoo claims



Damaged Hair
Moisturizing
Anti-Static



Hair Breakage
Moisture Retention
Static Reduction



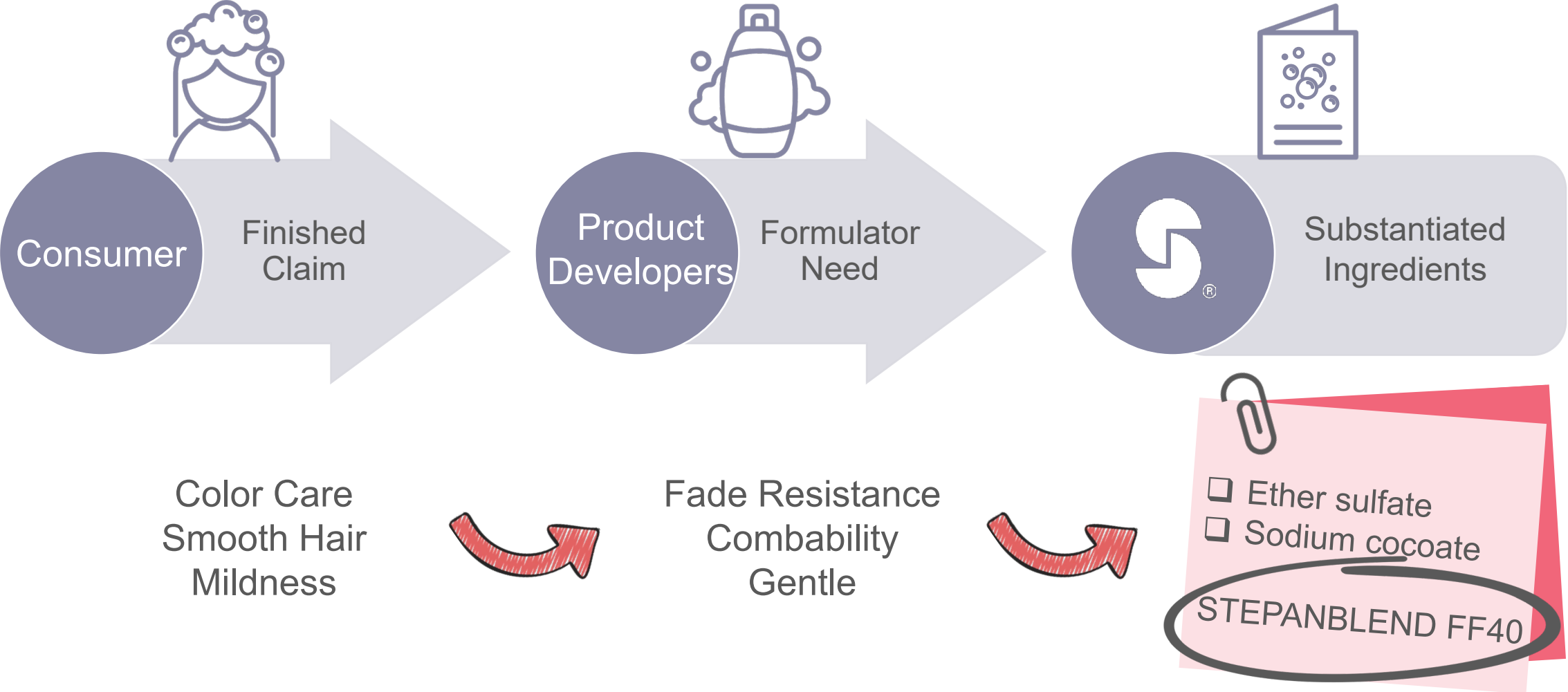
- ☐ Ether sulfate
- ☐ Ammonium sulfate

ALPHA-STEP PC-48

Two hexagons, one purple and one pink, are positioned in the top right corner of the slide.

Formulating for Color Care, Combability & Mildness

Formulating for top shampoo claims



The clever chemistry behind STEPANBLEND FF40

INCI Name

Sodium C14-16 Olefin Sulfonate (and)
Cocamide MIPA (and)
Cocamidopropyl Betaine

Appearance

Hazy, light-yellow liquid

Actives

40%



Exceptionally mild
Gentle on color-treated hair

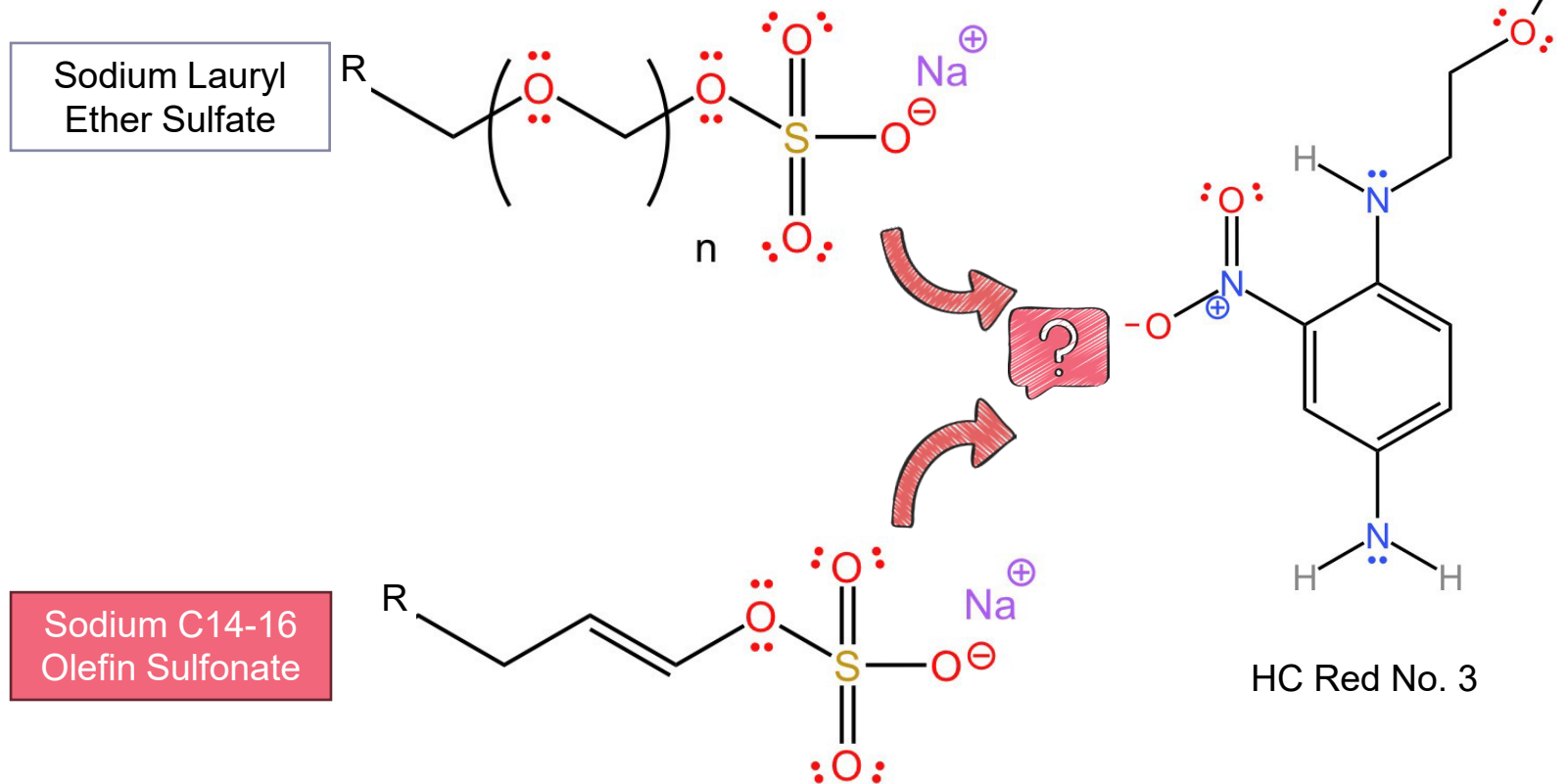


Readily biodegradable
No animal testing



No heat processing
Superior flash foam

Color Fading Mechanisms on Hair Dyes



The clever chemistry behind STEPANBLEND FF40

INCI Name

Sodium C14-16 Olefin Sulfonate (and)
Cocamide MIPA (and)
Cocamidopropyl Betaine

Appearance

Hazy, light-yellow liquid

Actives

40%



Exceptionally mild
Gentle on color-treated hair



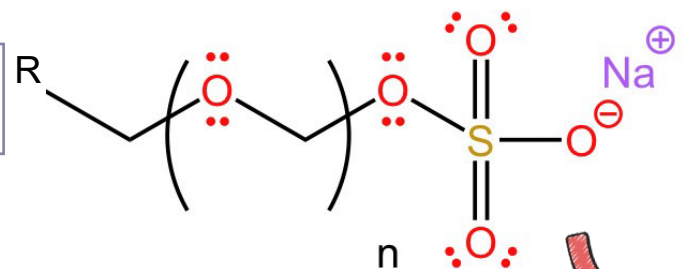
Readily biodegradable
No animal testing



No heat processing
Superior flash foam

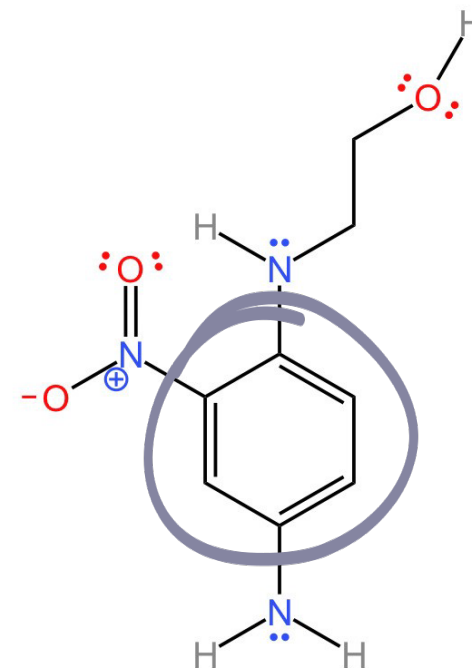
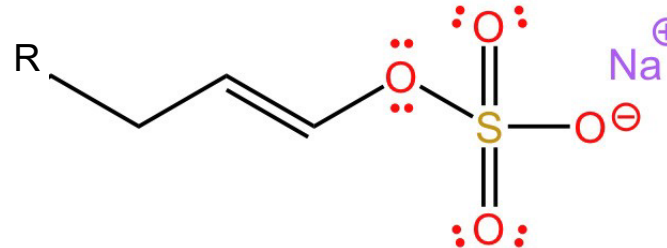
Color Fading Mechanisms on Hair Dyes

Sodium Lauryl
Ether Sulfate



Diffusion Controlled

Sodium C14-16
Olefin Sulfonate



HC Red No. 3

Small molecule



The clever chemistry behind STEPANBLEND FF40

INCI Name

Sodium C14-16 Olefin Sulfonate (and)
Cocamide MIPA (and)
Cocamidopropyl Betaine

Appearance

Hazy, light-yellow liquid

Actives

40%



Exceptionally mild
Gentle on color-treated hair

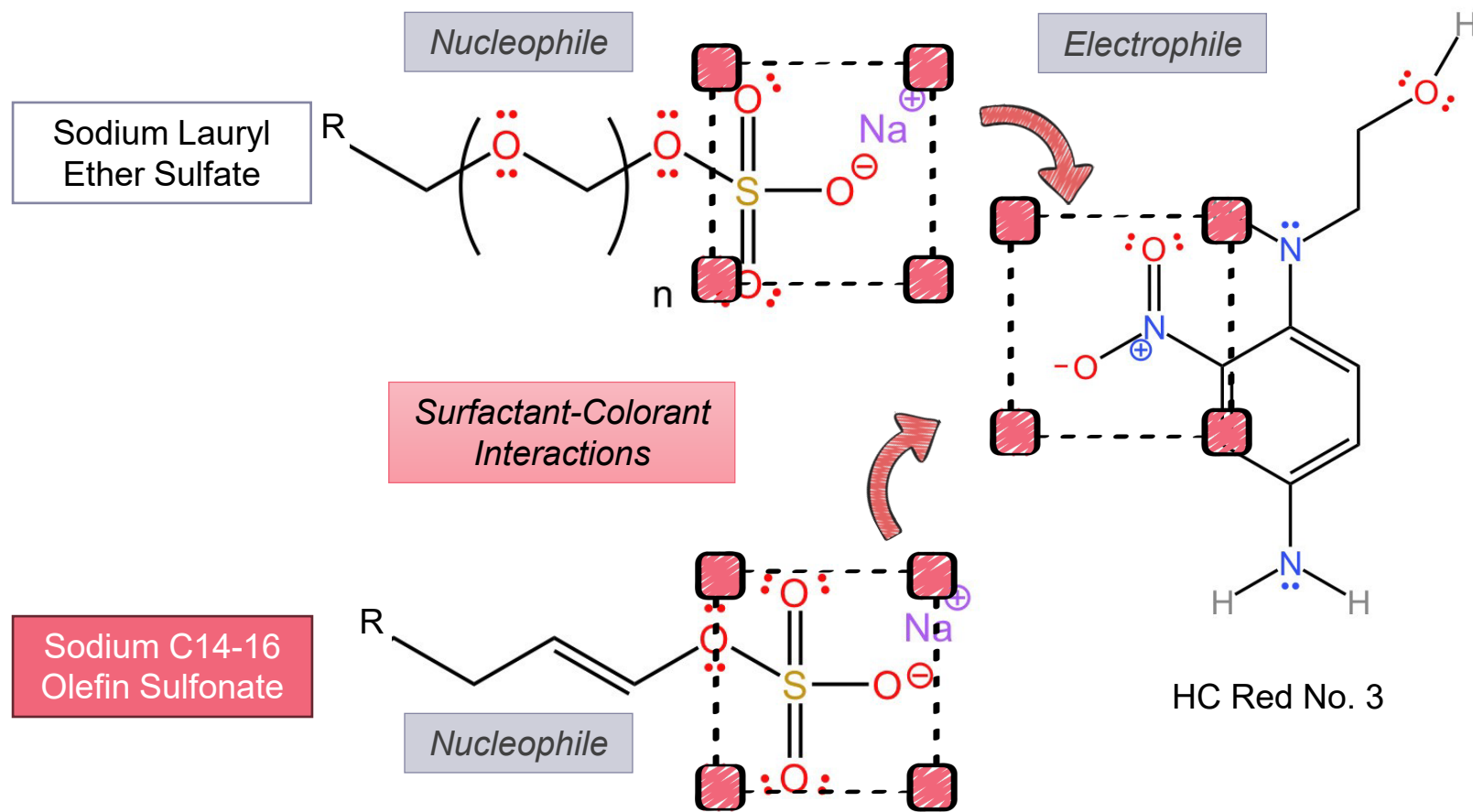


Readily biodegradable
No animal testing



No heat processing
Superior flash foam

Color Fading Mechanisms on Hair Dyes



Source: Robbins, Clarence R. *Chemical and Physical Behavior of Human Hair*. 5th ed., Springer, 2012.



The clever chemistry behind STEPANBLEND FF40

INCI Name

Sodium C14-16 Olefin Sulfonate (and)
Cocamide MIPA (and)
Cocamidopropyl Betaine

Appearance

Hazy, light-yellow liquid

Actives

40%



Exceptionally mild
Gentle on color-treated hair



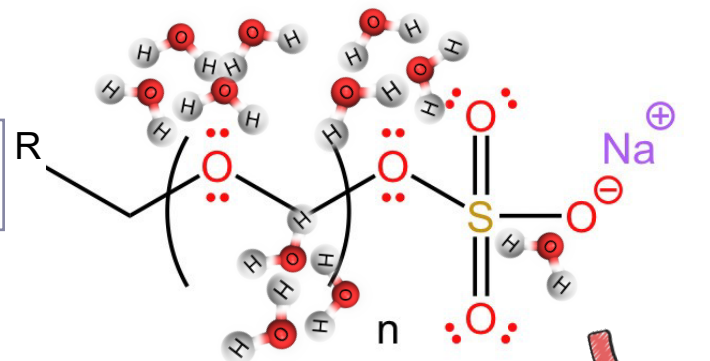
Readily biodegradable
No animal testing



No heat processing
Superior flash foam

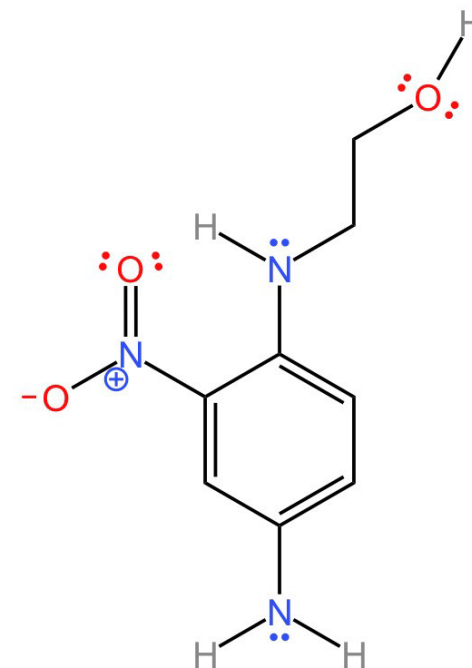
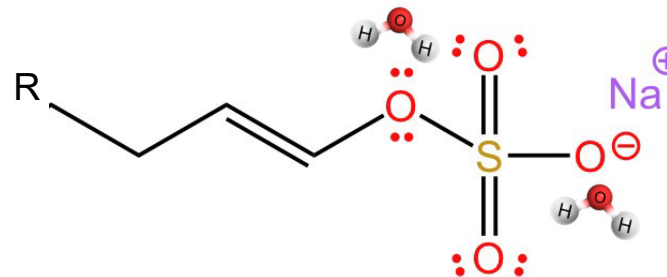
Color Fading Mechanisms on Hair Dyes

Sodium Lauryl
Ether Sulfate



Surfactant
Van der Waals binding sites

Sodium C14-16
Olefin Sulfonate



HC Red No. 3

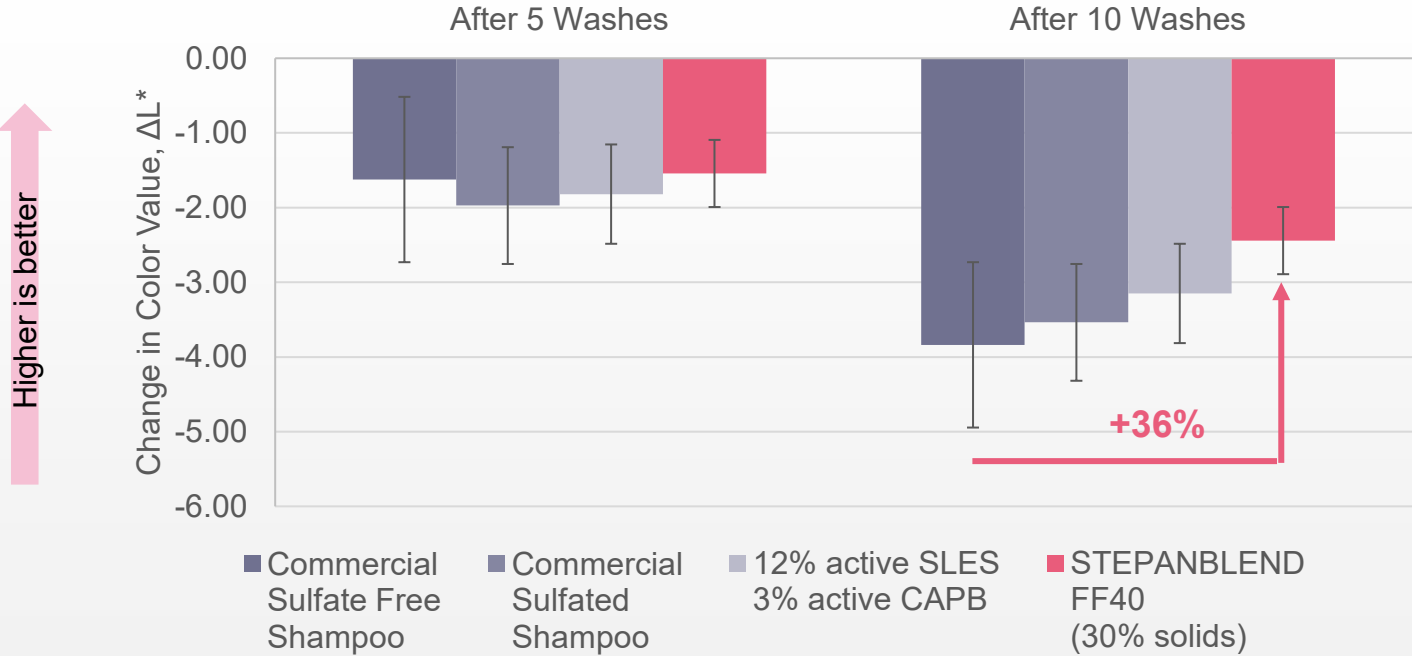


Protect colored hair with wash longevity



Fade Resistance

STEPANBLEND FF40 delivers exceptional fade resistance, matching that of a leading commercial sulfate-free shampoo, with superior performance after multiple washes.



Hair tresses washing, Type 1C bleached with red shade, compared to untreated, 3 tresses per treatment.
Measurements made with Ultra Scan Vis Hunter Lab Colorimeter. ΔL^* value measures change in white/black color vs. initial condition (unwashed).
SLES: Sodium Laureth Sulfate, CAPB: Cocamidopropyl Betaine.

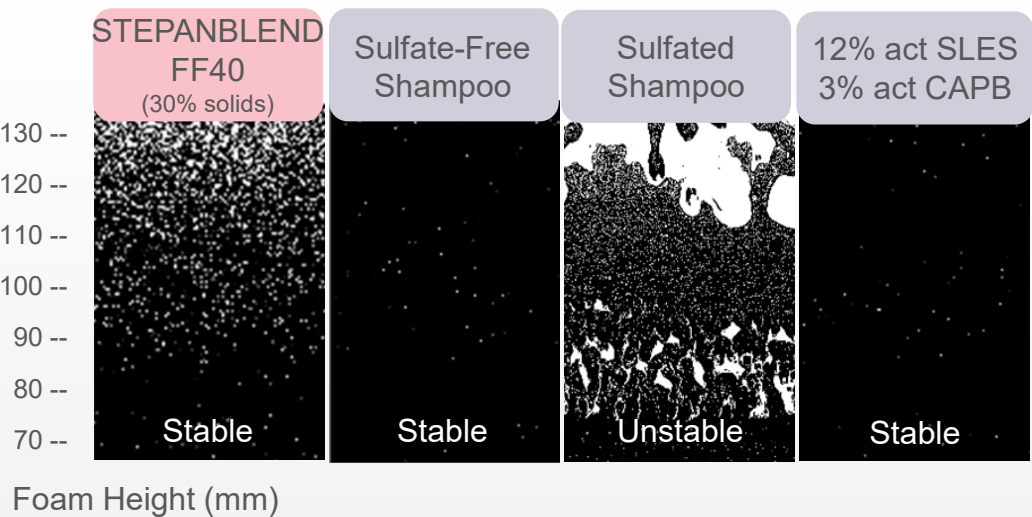
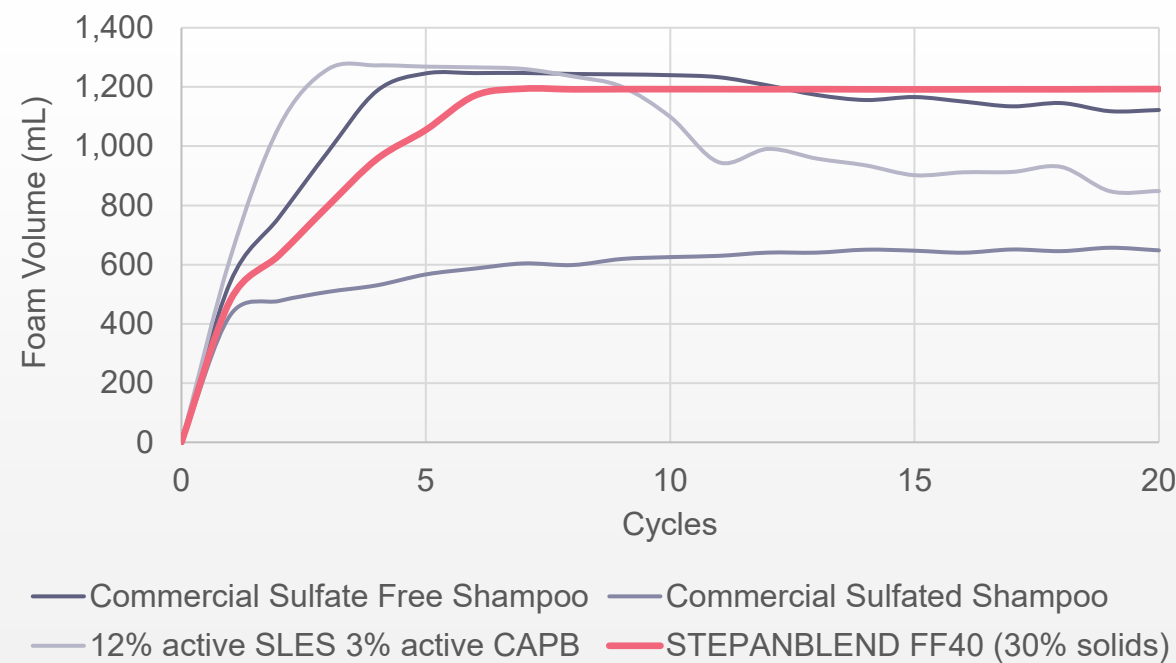


Ensure cleanliness and foam consistency



Foam Volume & Stability

STEPANBLEND FF40 delivers high foam volume and stability compared to commercial sulfate-free and sulfated shampoo benchmarks, meeting consumer washing demands.



Method: 50 mL of 3% weight solution at 1300 RPM
Measurements made with SITA® foam Tester. Max foam is the maximum quantity of foam produced during 20 mixing cycles.
Foam Volume (3D in mL) is equivalent to Foam Height (2D in mm)
SLES: Sodium Laureth Sulfate, CAPB: Cocamidopropyl Betaine.



Pop-Up

Video #2

Stepan 
Personal Care

Generate copious foam
volume and consistency with
Stepan's **STEPANBLEND® FF40**



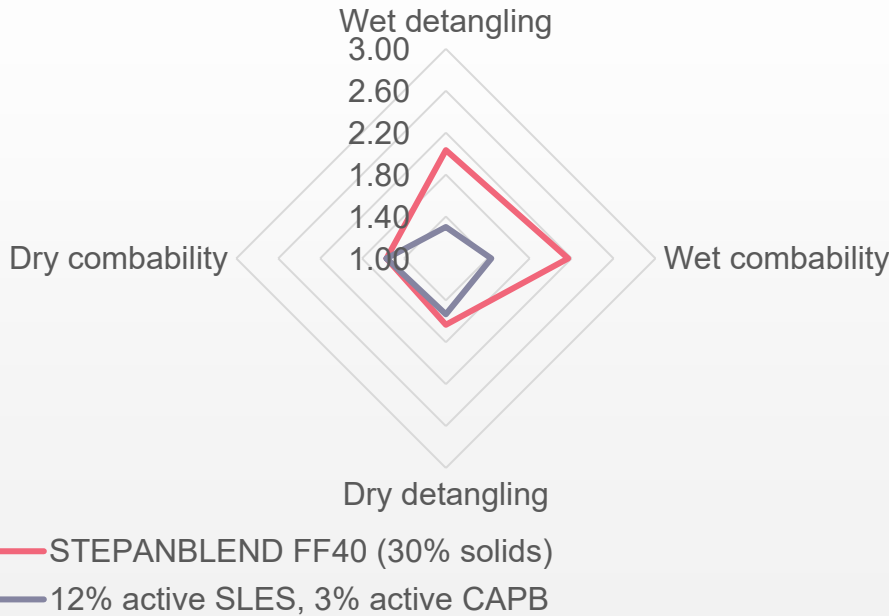
STEPANBLEND® FF40

Support gentle detangling with mild care

Combability



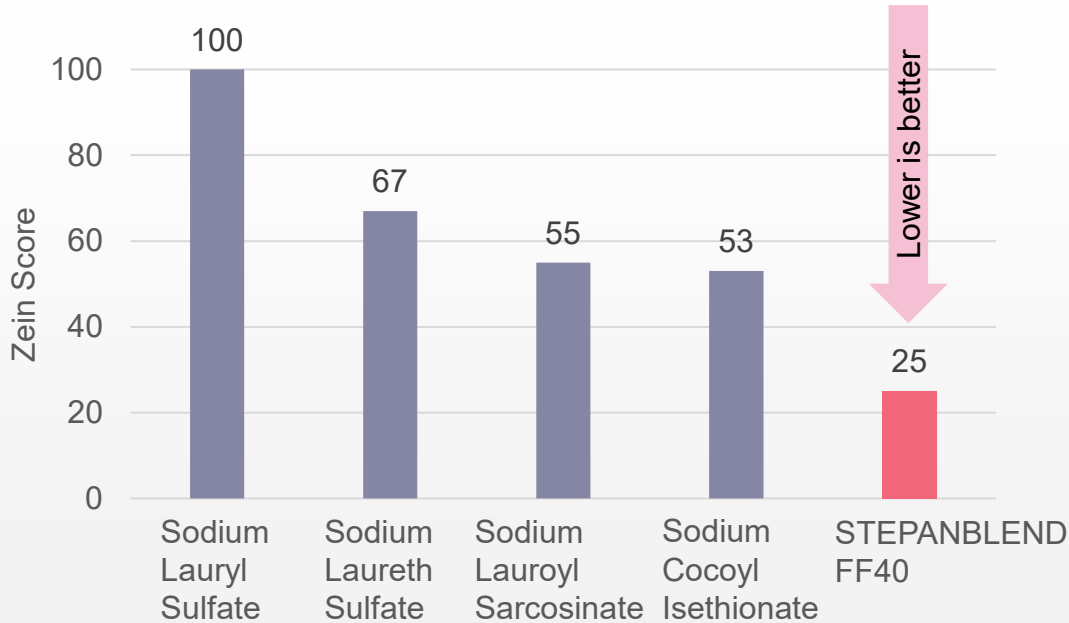
STEPANBLEND FF40 demonstrates superior wet and dry detangling with improved wet combability compared to SLES:CAPB for better manageability.



Mildness



STEPANBLEND FF40 offers exceptional mildness for shampoos having a significantly lower Zein Score than traditional sulfate surfactants and even common sulfate-free choices.

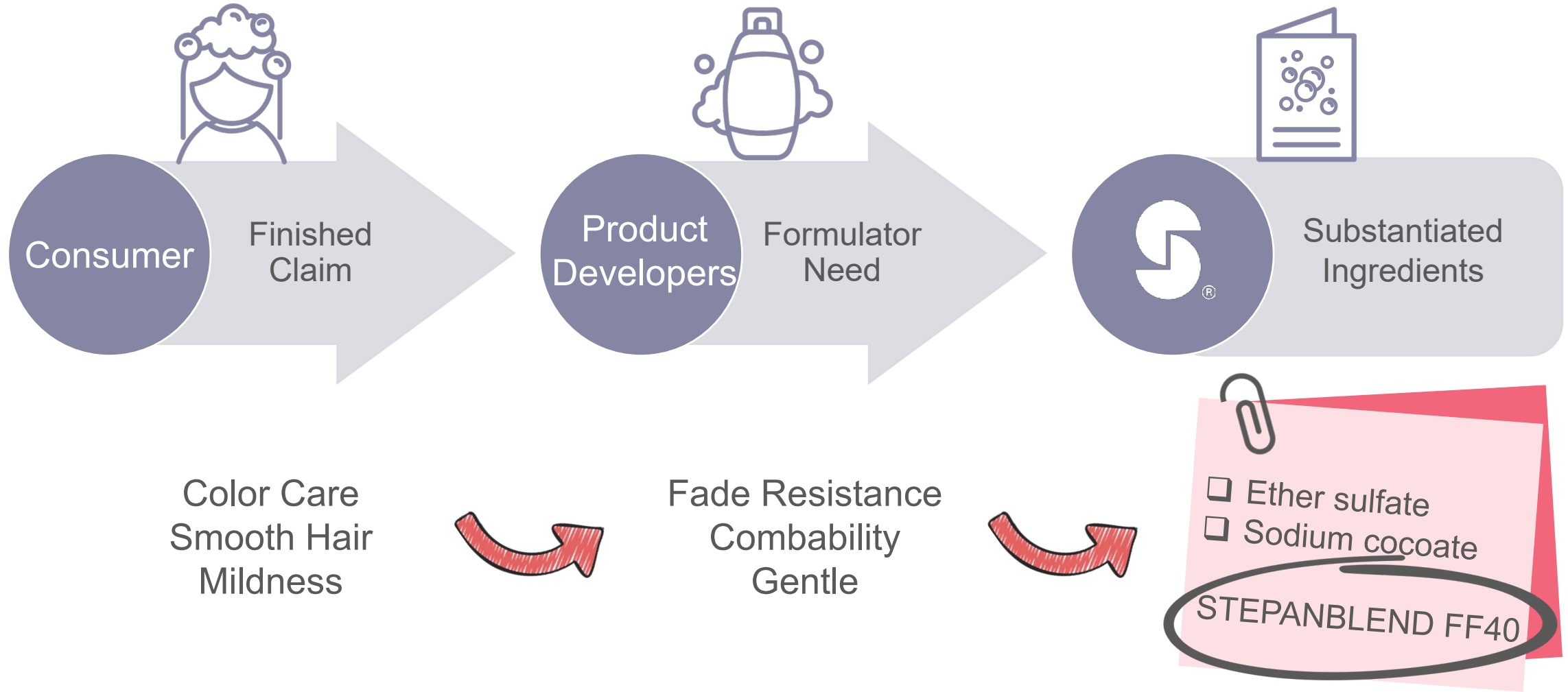


100 g of Type 2A bleached, moderately damaged hair. 0.1 g of shampoo applied per gram of hair tress weight.
1 min shampooing followed by 5 panelists evaluation of hair.

Zein score test on 1% active surfactant solution. Scores are normalized to sodium lauryl sulfate, which is given a score of 100.



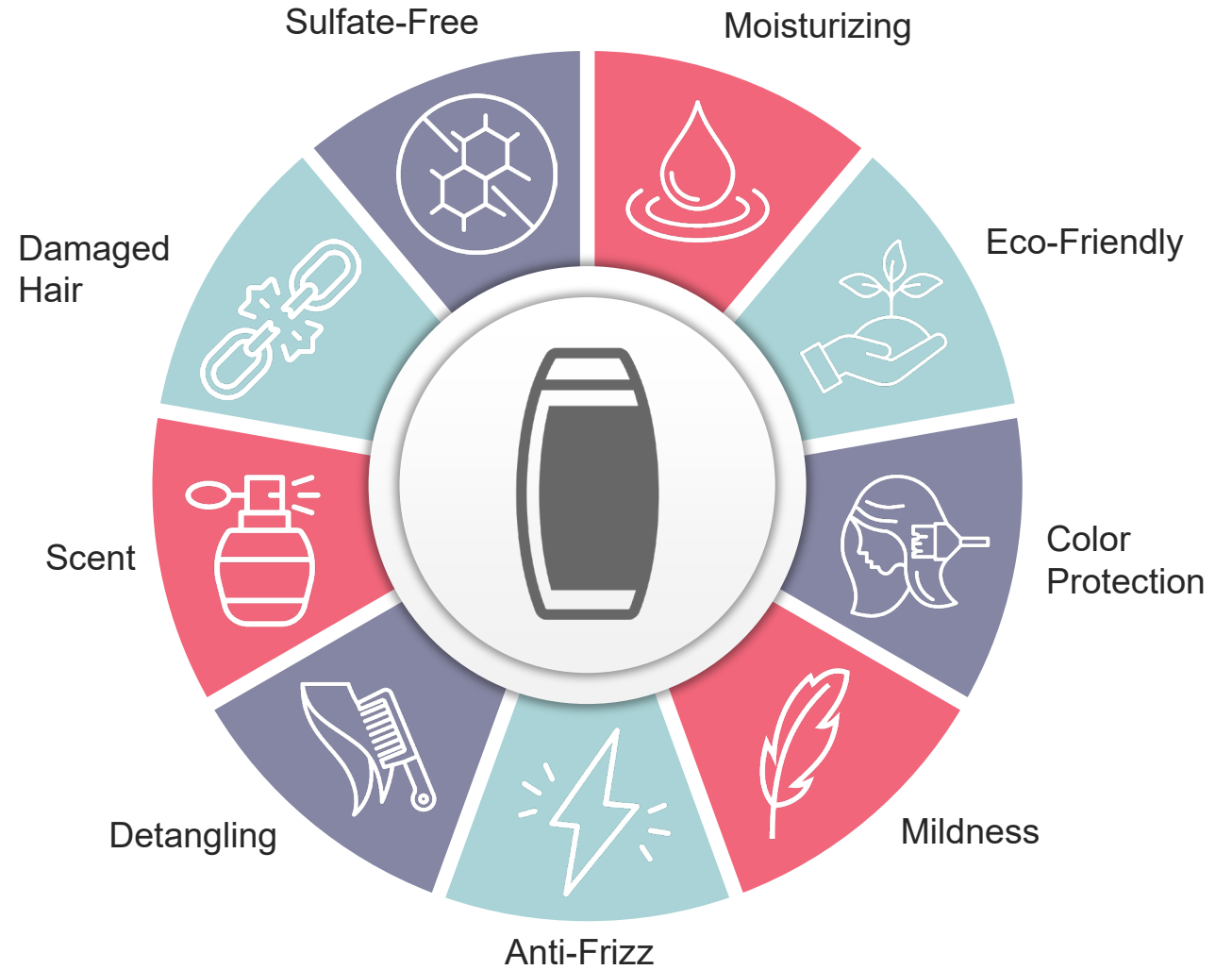
Formulating for top shampoo claims



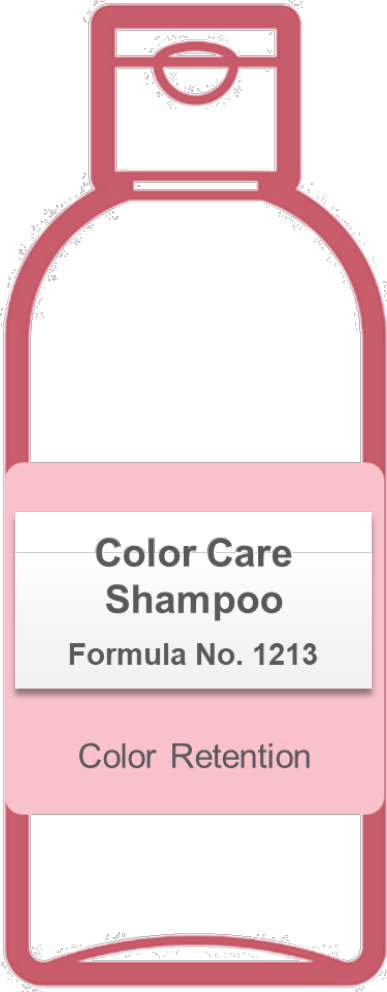


**Wrapping up your journey to
shampoo success!**

Whether you're developing novel formulations or refining your portfolio, Stepan is here to support your hair claim needs!



Formulation inspiration in a bottle, no waiting required




The screenshot shows the Stepan Personal Care website. The navigation bar includes links for Products & Markets, Innovation, Sustainability, You & Stepan, Investors, and News & Events. The main content area is titled '71 Formulations' and displays a table of product information. The table has columns for Name, Formulation Number, Appearance, as is, and Viscosity, cps. The table lists 10 formulations, including 'Soundless Base: Personal Care Cleansing', 'Sulfate-Free Color Care Shampoo', 'Luminator Shampoo', 'Lead-to-Toe Baby Shampoo with Natural Preservative', 'The Minimalist Wash with BIO-TERGE® AS-35 HP-A', 'Premium Shampoo with STEPANBLEND® APB', 'Shampoo Std', 'Crisp MAPROSYL® 30-B Shampoo', 'Super Easy-to-Make® Mild, Sulfate-Free Shampoo', and 'Ice Cream Syrup Shampoo'.

Name	Formulation Number	Appearance, as is	Viscosity, cps
Soundless Base: Personal Care Cleansing	1610	Hazy to translucent, viscous liquid	45,000 - 75,000
Sulfate-Free Color Care Shampoo	1605	Clear colorless to slightly yellow viscous gel	26,240
Luminator Shampoo	1582	Viscous, slightly violet, shiny liquid	7,000 - 8,000
Lead-to-Toe Baby Shampoo with Natural Preservative	1575	Yellowish, viscous clear liquid	2,500 - 3,500
The Minimalist Wash with BIO-TERGE® AS-35 HP-A	1566	Clear, yellowish liquid	15,000 - 20,000
Premium Shampoo with STEPANBLEND® APB	1561	White liquid	5,000 - 6,000
Shampoo Std	1560	Crystal clear liquid	5,000 - 6,000
Crisp MAPROSYL® 30-B Shampoo	1556	Pearly, viscous flowable liquid	6,000 - 10,000
Super Easy-to-Make® Mild, Sulfate-Free Shampoo	1541	Transparent, thin gel	13,200
Ice Cream Syrup Shampoo	1523	Viscous, slightly yellow liquid	4,000 - 5,000
Scalp Treatment: Conditioning Shampoo	1497	Off-white, pearlescent liquid	7,500 - 12,500
With Honey! Honey Type Shampoo	1492	Clear viscous liquid	10,000 - 16,000

Resources for formulators across the development journey

Shampoo

Formulation Guide



Stepan

Personal Care

Designed for personal care formulators, this guide provides detailed information on all aspects of shampoo formulation — from ingredient functions and formula parameters to an easy-to-use ingredient decision tree. Use Stepan's formulation expertise as a handy reference throughout your product development journey.

Start with the Basics — Formula Breakdown

Each ingredient in a shampoo formula is crucial for achieving desired performance targets. Below you'll find the key ingredient types, their functions and recommended use levels to help create a well-balanced shampoo.

Function	Ingredient Type	Formula Wt. %
Carrier of Ingredients	Water	45-90
Cleaning dirt and oil from hair	Anionic Surfactant	15-25

Generate and stabilize
 Improve cleaning and
 Incorporate moisturizing
 Enhance the sensory
 Build higher viscosity
 Create clear appearance
 Provide differentiated
 Prevent growth of micro

Choose Based on Key Needs – Ingredient Decision Tree

Start with your formula's needs and use the decision tree below to select surfactants for the base (**Step 1**) and additively to enhance the sensory performance (**Step 2**). For detailed product options to personalize your formula, reach out to our Stepan formulation experts.

Step 1: Base Surfactants

```

graph TD
    A[Sulfate-Free] --> B[No Priority: High Naturality or Highest Performance]
    B --> C[Naturality]
    B --> D[Performance]
    C --> E["ALPHA-STEP® PC-48  
Sodium MPH1 Sulfobetaines  
and Dioxane 2 Surfactants"]
    C --> F["LATHANOL® Products  
Sodium Lauryl Sulfonates"]
    D --> G["BIO-TERGE® AS-Series  
Sodium Cit 14, Dioxane  
Sulfonates"]
    D --> H["AMPHOSOL® Products  
Coemulgenter Gelant"]
    I[Traditional or Sulfate-Free Based Formula] --> J[Traditional]
    J --> K[Naturality]
    J --> L[Low 1,4 Dioxane]
    K --> M["STEPANOL® WA-Series  
Sodium Lauryl Sulfate"]
    K --> N["AMPHOSOL® Products  
Coemulgenter Gelant"]
    L --> O["STEPOL® LP Products  
Sodium Lauryl Sulfate"]
    L --> P["AMPHOSOL® CS-50  
Coemulgenter Individualitate"]
  
```

Properties

- Start with water
- Add thermo-stable soluble ingredients
- Pre-mix or solubilize with solubilizers
- Add solubilized in
- Mix until homogenize
- Add viscosity in and/or salt
- If heating, add frag and temperature ingredients at 4-8
- Adjust pH
- Add sensory enhancers

Step 2: Aesthetics

Mildness & Softness Effect	Pearlizing	Color Protection	Conditioning Feel
STEPANOL® SL3-BA Trimethylamine Sulfobetaine	STEPAN® PEARL-Series Glycol Stereol Steroids	STEPANBLEND® FF40 Sulfate-Free Blend	STEPANQUIL® ML Polyquaternium-12

The Foam Factor: How it Shapes Personal Care Success

Foam plays a crucial role in personal care products, influencing both the user experience and the product's effectiveness. Detailed characterization of foam properties has become increasingly critical due to its strong correlation with product performance. This session will explore the science behind foam formation, the factors influencing its stability and structure, and the latest advancements in foam technology. Attendees will gain insights into how these factors impact consumer satisfaction and product efficacy.

Function	Ingredient Type	Recommendation
----------	-----------------	----------------

Cleans dirt and oil from the hair.	Primary Anionic Surfactant	Naturally Derived Better Foamers. Lower Premium: LATH Superior to the STEPAN-MILD line.
Improves foam generation and stabilization. Improves viscosity building profile.	Secondary Amphiphilic Surfactant	Better Viscosity Better Skin Feel Higher Active: As
Helps in the removal of grease and oil. Improves viscosity building and foam generation/stabilization.	Secondary Nonionic Surfactant	Best Performance Cost-Effective: N
Helps to build viscosity in formulas that	—	Best Performance

Type of Output	sub	may or may not be difficult to thicken.	Thickener	Cost: AMPH Natural: STEP	
		Helps to incorporate water-insoluble ingredients into a clear formula.	Solubilizer	Multi-Functional: Cost-Effective: S Natural: Silicone Natural: STEP Cost-Effective: S Clear Liquid: AM	
Replicates		Provides a softness to the hair. Helps to improve wet and dry combability.	Conditioning Agent		
Other Ingredients					
Testing		Gives the final formula a pearlescent and/or glossy, milky, lotion-like appearance.	Pearlizing/Opaclifying Agent	Glycol monosteres copolymers	

Concentration			
Key Observations	Focus	Helps control water hardness and decrease mineral build-up in the hair.	Chelant
		Can provide improvement with hair strength, manageability and overall hair health.	Vitamins
		Can provide improvement in conditioning, shine, combability and strength. Can also reduce static/frizz.	Protein and Amino Acid Derivatives
		Helps prevent the growth of microbes and bacteria in the scalp/follicle.	Preservative

Dyes, fragrances, and other components meant to enhance the visual appeal and experience of the final formula.	Aesthetics	FD&C colorants, botanical and herbal extracts, and methylisothiazol
--	------------	---

Stepan 
Personal Care

Recommended Products

ALPHA-STEP® PC-48
BIO-TERGE® AS-40 HP
NINOL® LAL COARSE
ENDS: STEPAN-MILD® LSB,
PCL

Build: AMPHOSOL® HCA-HP
AMPHOSOL HCG-HP
AMPHOSOL CG-50

ce: NINOL® CAA
NINOL COMF-N

ce: NINOL CAA

SOL CDB-HP
i-MILD GCC

NINOL CAA
STEPANTEX® CO-40

Alternative: STEPAN-MILD L3
i-MILD GCC
STEPANQUAT® ML
IMMONYX® CETAC-30

arates, glycol distearates,

<p>tamate Diacetate, Sodium ium EDTA etetracetic acid)</p>
<p>in B5), tocopheryl acetate rbic acid</p>
<p>at protein, quaternized acids</p>
<p>enoxyethanol, thiazolinone,</p>

various fragrances,
herbal extracts



Stepan
Personal Care

Color Protecting Hair Care
with STEPANBLEND® FF40


Color protecting shampoos are essential for maintaining vibrant hair color and preventing premature fading. Sulfate-free products are widely recognized for their gentle cleansing properties. STEPANBLEND FF40 provides a high-performance solution, offering excellent color fade resistance compared to leading traditional and sulfate-free shampoos. Formulate with confidence, knowing it will help maintain vibrant hair color for extended periods.

STEPANBLENDS [®] commercial surfactants		BIO-TERGE [®]			
		AS-40 HP	AS-40A	AS-40K	
<p>Color Value, ΔL*</p>	INCI Name	Sodium C14-16 Olefin Sulf.			
	Performance	Highest foam volume and low viscosity response as compared to other			
	Key Characteristic	Formulation flexibility	Friendly preservative	Cost effective	
	Product Form	Clear liquid	Clear liquid	Clear liquid	
	Preservative	None Required	Resorcin Acid	CIT MIT	

Chemical	Commercial	SD	Free	Free
pH Range	10.5 - 12.0	5.5 - 6.5	5.0 - 6.5	
10% in water				
Actives, %	38.0 - 40.0	37.0 - 41.0	38.0 - 40.0	
Sodium Chloride, %	1.0 Max	1.0 Max	1.0 Max	
Sodium Sulfate, %	1.0 Max	1.0 Max	2.0 Max	
Color, Kant, % in water	100 Max	100 Max	100 Max	
Viscosity at 25°C, cPs	1,000 Max	500 Max	500 Max	

[illegible]

100

Stepan 
Personal Care

Products and elevate your personal care formulations.
Desired product form and/or preservation.

AS-40 HASB*		AS-90 BEADS
Sulfonate		
anionic surfactants, such as Sodium Laureth Sulfates		
Region-specific	Concentrated form	
Clear liquid	Powder/beads	
None Required	None Required	

Vehicle Frequency	Vehicle Frequency
11.0 - 13.0	8.0 - 10.0 5% in water
37.0 - 39.0	85 Min
Not Listed	1.5 Max
1.0 Max	4 - 8
80 Max	150 Max
500 Max	N/A

EMA	Global
Not Evaluated	Not Evaluated

ury at po.stevan.com/contact.
 our own study and the works of others and is subject to change without prior notice. The
 age, environmental, social or sustainability considerations, including combined health and safety
 of any patients. STEVANO COMPANY MAKES NO PRODUCT WARRANTY OF
 RANK, INCLUDING AS TO PERFORMANCE, RELIABILITY, PAIN-OF-USE, SAFETY,
 loss of fault) to the vendor, its employees, or any other party for any direct, indirect, special
 use claims and releases Stevano Company (and its employees, subsidiaries and affiliates)

“I don’t know where to start...”

“I need to explore more options...”

“I know what I am looking for...”

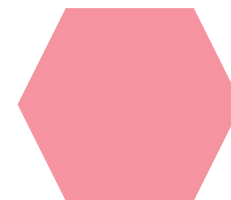
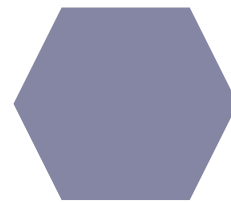
Stepan 
Personal Care

Stepan's experts are your partners for hands-on support

Connect with a chemist from around the globe for personalized demonstrations or formulation troubleshooting!

- Reach out to your local sales representative
- Contact us through UL Prospector





Mark Your Calendars!

Part 2: Conditioners Coming in October



Thank you!

Visit stepan.com/personalcare
for more information on our portfolio.

Follow us on:

