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# Formulating “Hacks” with Stepan Personal Care

Presented by

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# Agenda

1. What Matters to Consumers
2. What Challenges Exist in Meeting Consumer Needs
3. Stepan's Formulation "Hacks"

# Objectives

- Innovative Perspectives
- Efficient Techniques
- Game-Changing Insights

# What Matters to Consumers

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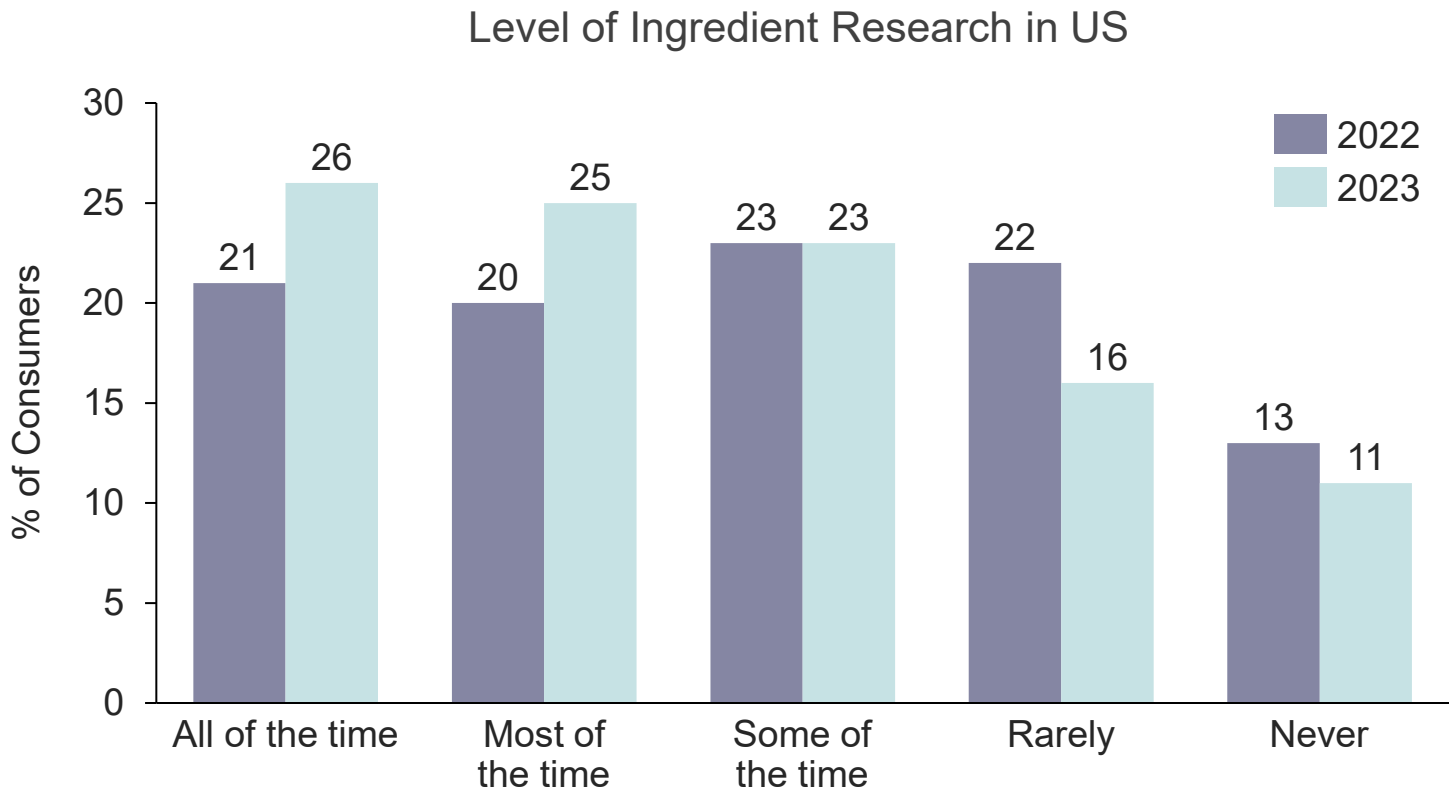
# The Curious Consumer

Consumers regularly research their ingredients by checking the product label.




89%

Of consumers engage in **any ingredient research**

51%

Of consumers engage in **significant ingredient research***

*Sum of consumers who research ingredients "All of the time" and consumers who research ingredients "Most of the time"

*Mintel Report. Ingredient Trends in Beauty and Personal Care – US – 2023*

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# Desire is A Double-Edged Sword

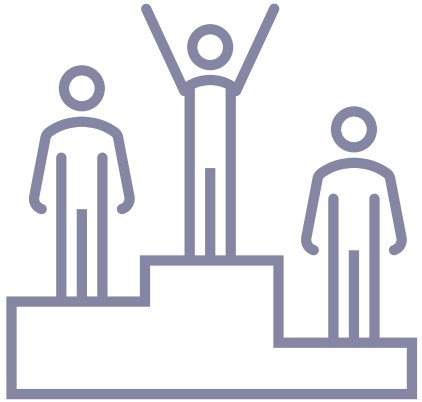
Consumers still prefer function over “extra” claims.

*Knowing better is feeling better…*

52%

Of ingredient researchers are **motivated to learn** because **they feel better** when they know what’s in their products

*…outcome remains the bottom line*



34%

Of consumers still **care more** about the **effectiveness of a product** than how it’s made or what it’s made of

*Mintel Report. Ingredient Trends in Beauty and Personal Care – US – 2023*

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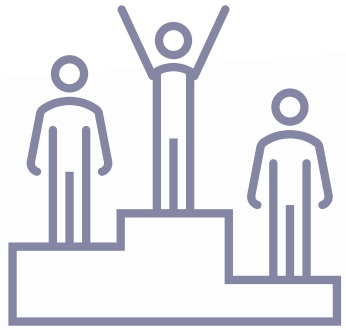
# Consumers Look For Several Key Benefits

Today we will focus on rinse-off cleansing products.



**Feel**

*When I'm done using it,*
*I want my skin to feel like…*

**Viscosity**

*When I put it on my hand,*
*I expect it to look like…*

**Foam**

*When I'm using it to clean,*
*I want to see it working…*

**Safety**

*When it touches my body,*
*I know it is safe for…*

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# Poll Question

- Which of these key benefits is the most important in what you want to see in your products and/or formulations?
  A. Viscosity
  B. Feel
  C. Foam
  D. Safety

# What Challenges Exist in Meeting Consumer Needs

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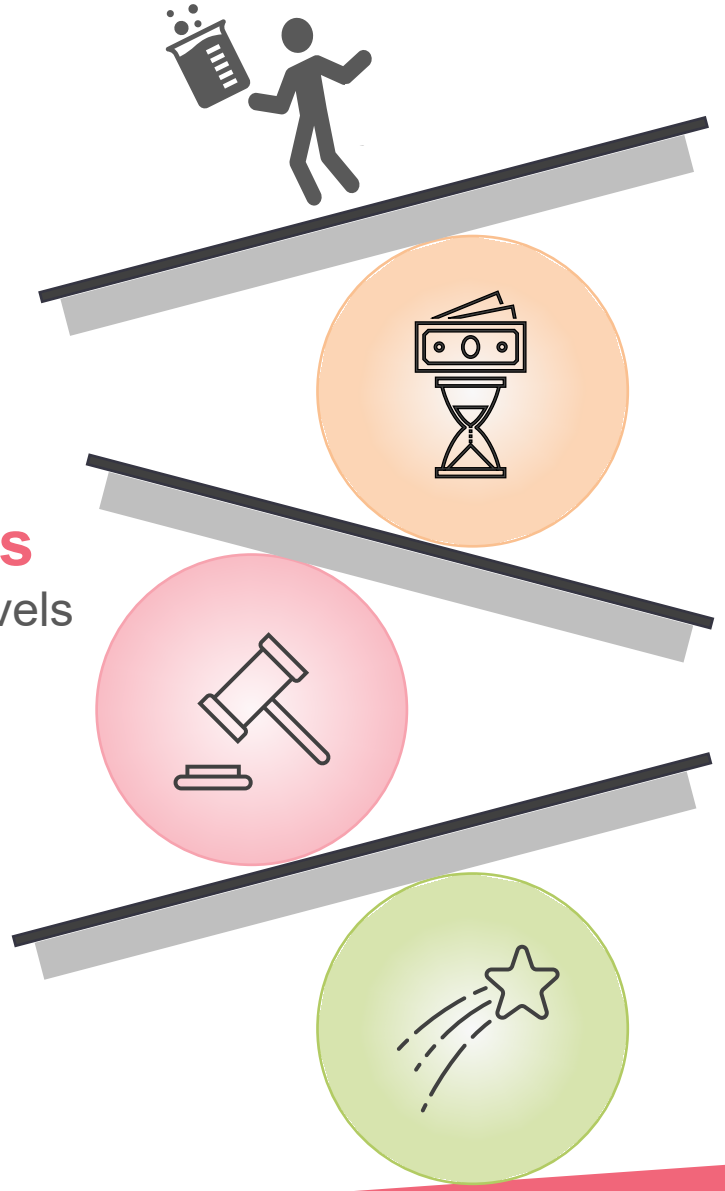
# What Are Formulators' Challenges Today?



## Time & Money

Restrictions can result in decreased performance and slower launch cycles

## Regulatory Requirements

Ever-changing updates limit use levels or even eliminate ingredients with proven history of success

## New & Upcoming Trends

Ingredient trends often do not function as well as traditional materials

# These Challenges Negatively Impact Consumer Needs

Feel

*When I'm done using it,*
***my skin feels greasy & tacky!***

Foam

*When I'm using it to clean,*
***there are no bubbles!***

Viscosity

*When I put it on my hand,*
***it is water thin!***

Safety

*When it touches my body,*
***it feels irritating!***

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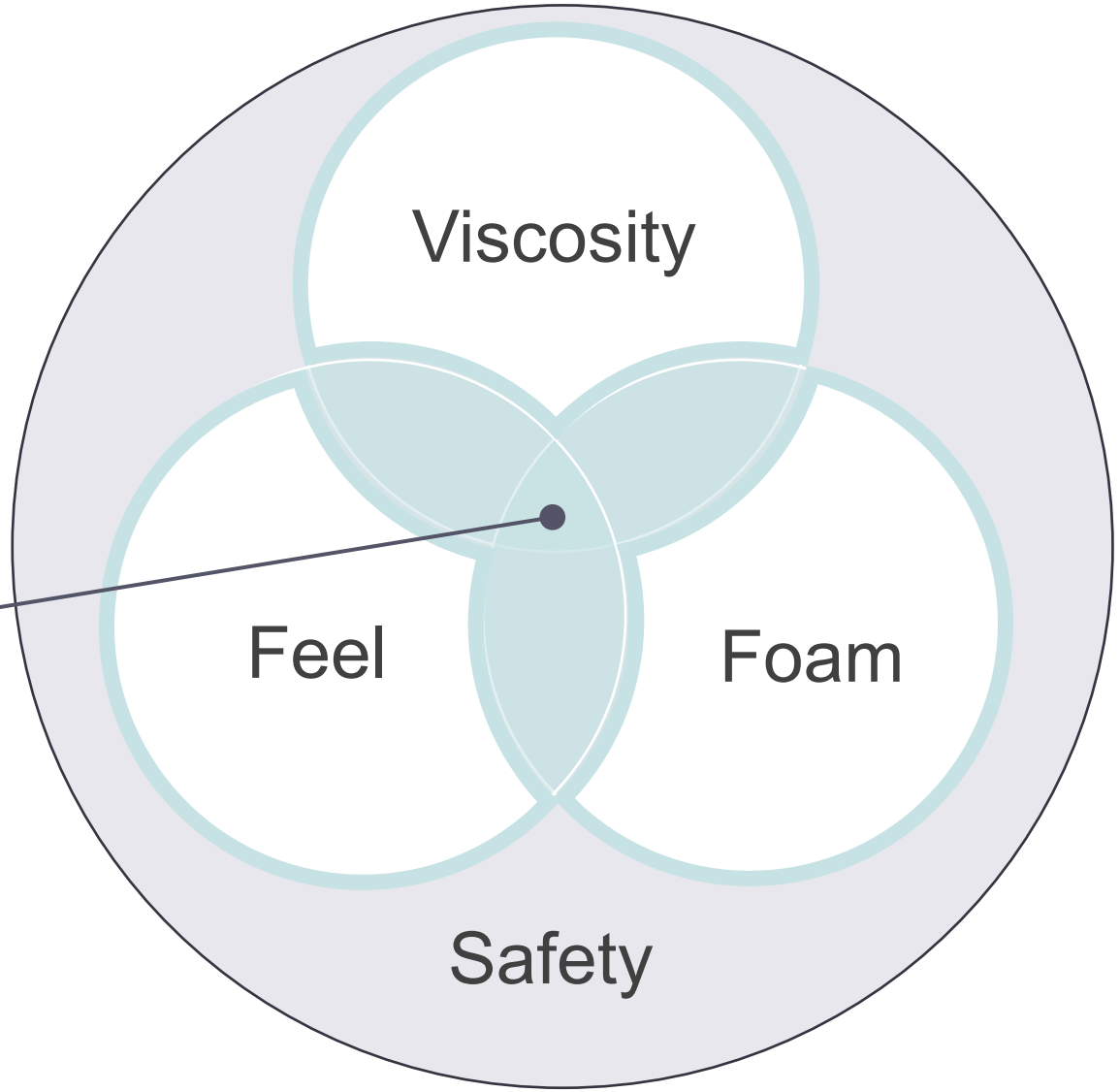
# By Addressing These Challenges Together,

# We Can Target A High Performing Formula That Meets Consumer Needs!



# Stepan's 6 Formulation "Hacks"

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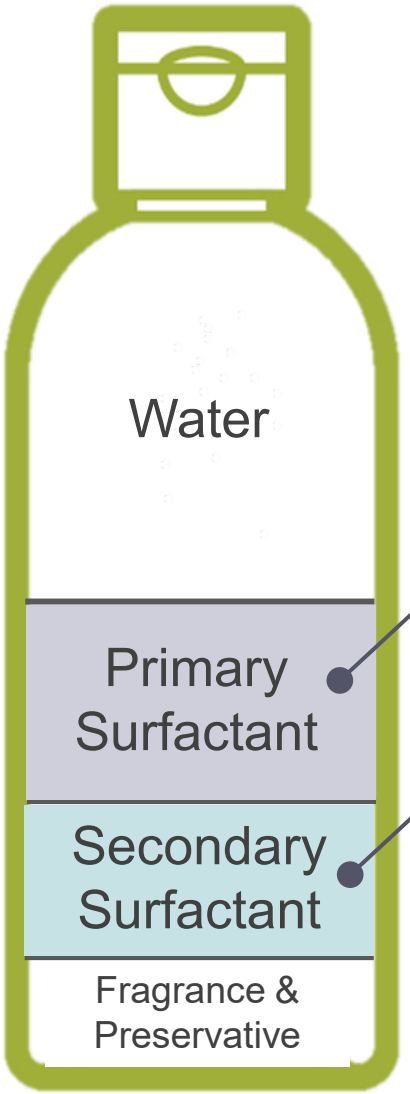
# Let's Start with a Standard Rinse-Off Formulation




This is the most common, cost-efficient type of sulfate-free chassis with…

**BIO-TERGE® AS-40 HP**
INCI: Sodium C14-16 Olefin Sulfonate

**AMPHOSOL® HCG-HP**
INCI: Cocamidopropyl Betaine

| Key Properties: | |
|---|---|
| Total Surfactant Actives % | 15.0 |
| Ratio of 1° to 2° | 4 to 1 |
| pH, as is | 5.0 – 5.5 |
| Safety | SAFER CHOICE Meets U.S. EPA Safer Product Standards epa.gov/saferchoice |
| Viscosity | Water thin |
| Foam | Moderate |
| Feel | None, hollow |

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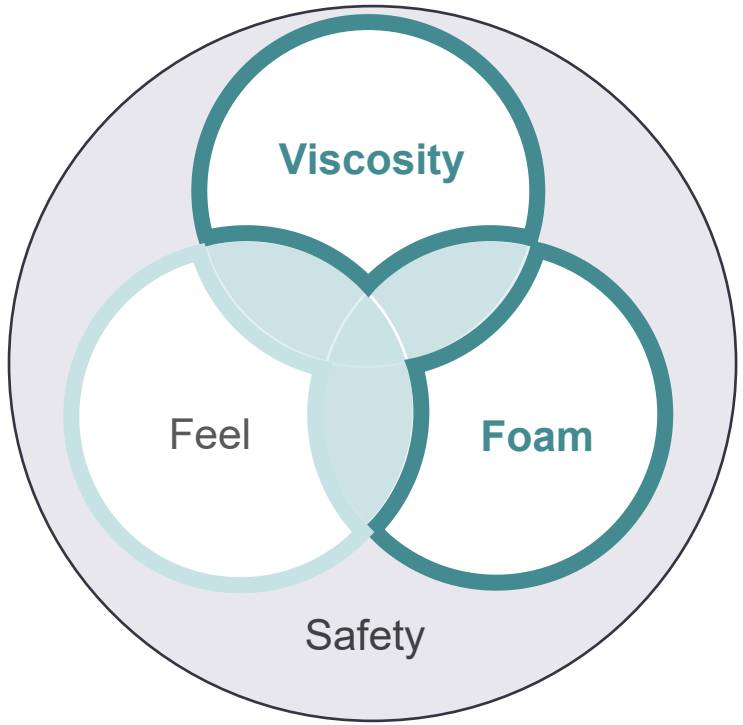
# Viscosity & Foam Challenges for Formulators

Pressure to maintain formulation costs as low as possible result in decreased actives, or materials that are less effective

Regulatory updates, such as 1,4-Dioxane restrictions, limit our toolbox for chemistries that achieve viscosity and foam targets

New format trends require more robust and unique rheology properties creating fun experiences for the consumer



# Stepan Personal Care's Dynamic Duo for Viscosity

| | | AMPHOSOL CDB-HP<br>INCI: Cetyl Betaine | NINOL® CAA<br>INCI: Dimethyl Lauramide/Myristamide |
|---|---|---|---|
| Safety | **ISO 16128 Score*** | 0.78 | 0.86 |
| | **Free From** | Sulfates, EO,<br>Preservatives, Polymers | Sulfates, EO,<br>Preservatives, Polymers |
| | **Irritation Potential**<br>(Zein, 1-100 Scale, Lower is Better) | 44 | 59 |
| | **Actives %** | 30 | 100 |
| | **Active Use Level %** | 0.5 – 5.0 | 0.25 – 2.0 |
| | **Handling** | Clear Liquid at RT | Clear Liquid at RT |
| | **Additional Cost** | Medium | Low |
| | **Lab Workup** | Back-Add, Adjust pH, and Mix | Back-Add and Mix |

*Stepan calculates Natural Origin Content based on biorenewable carbon content and excludes balance water and impurities/byproducts

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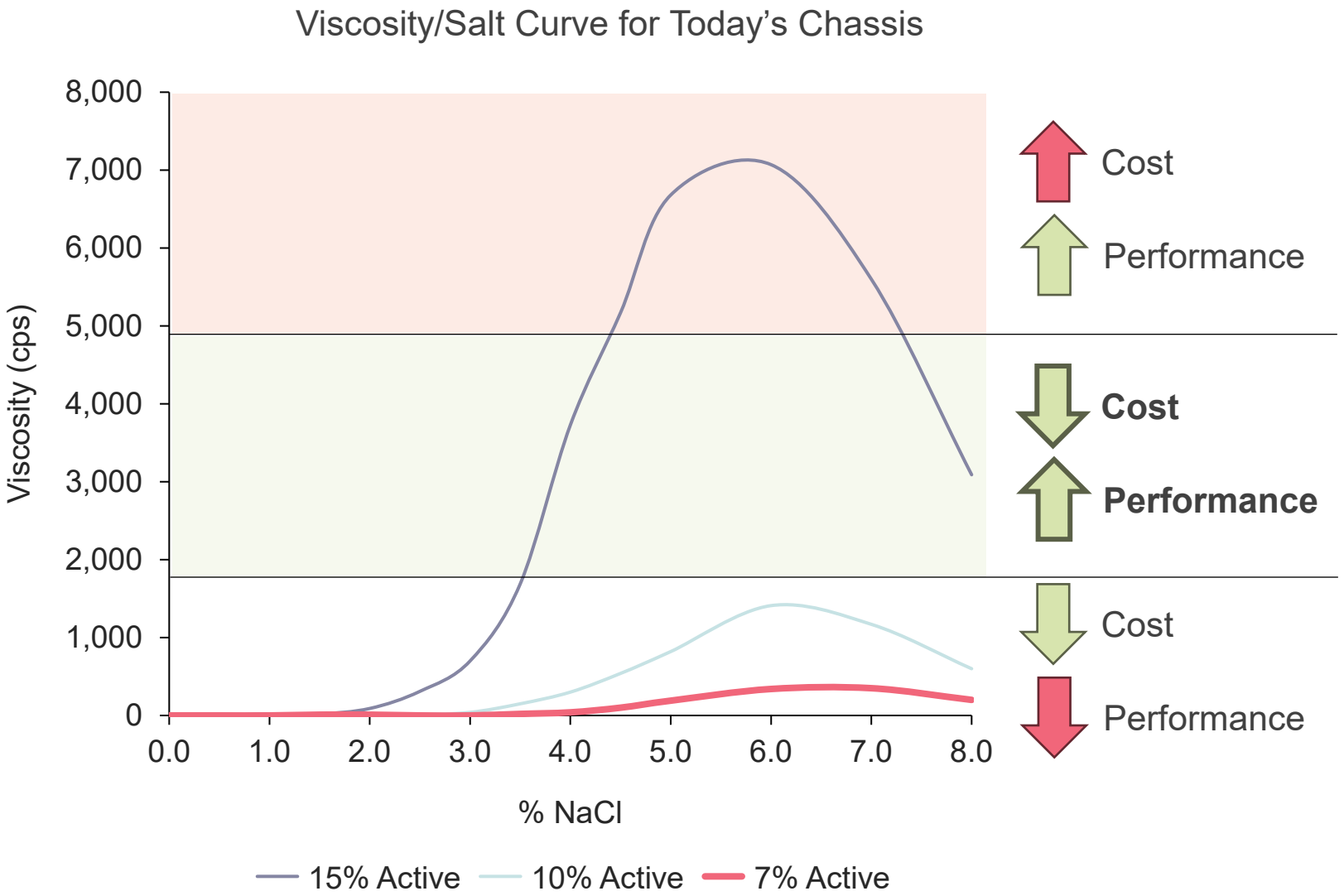
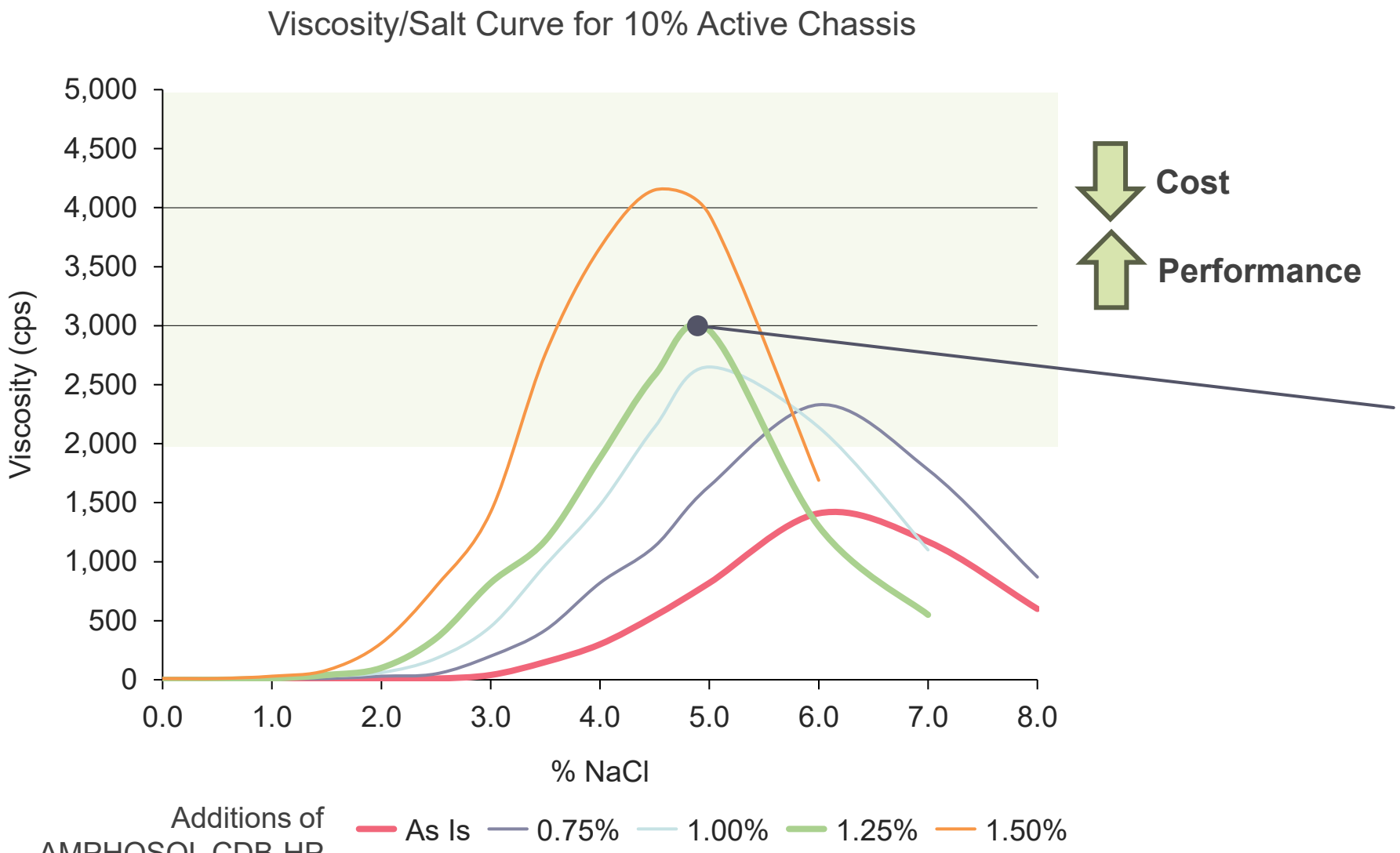
# Viscosity Is Typically Adjusted with More Actives or Salt




As the **actives** are **decreased** to adjust for cost savings requirements, the impact to the viscosity is significant resulting in **lower performing** formulas.

# #1 Add a Minor Addition That Allows Lower Actives




25%

Reduction in total surfactant actives while maintaining **high performance and lowering the cost**!

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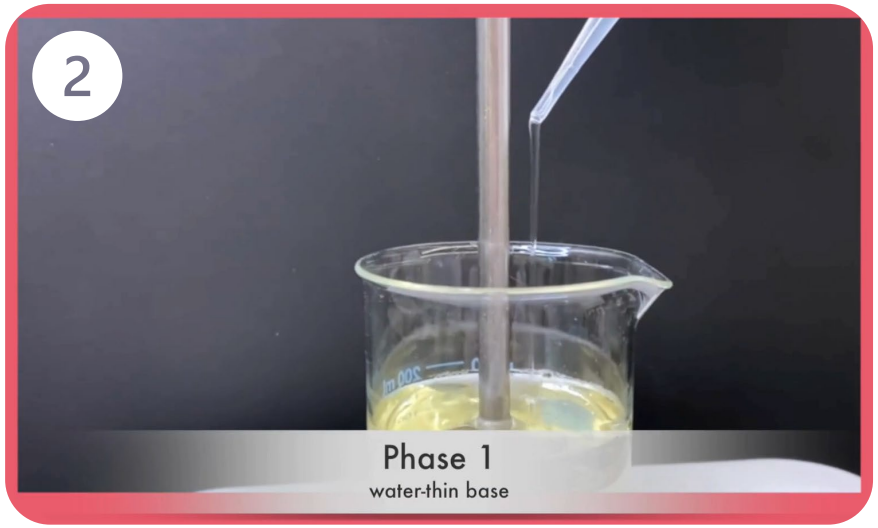
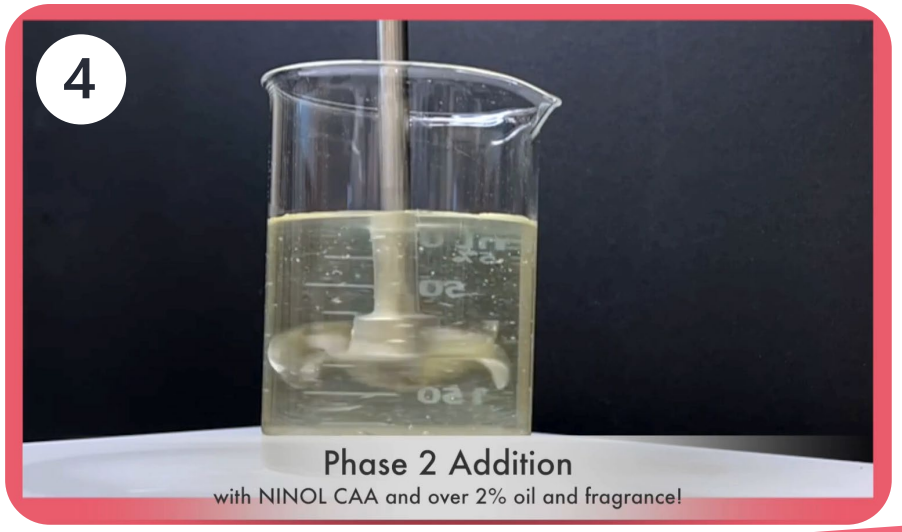
# #2 Opt for an Ingredient That Removes the Need for Salt







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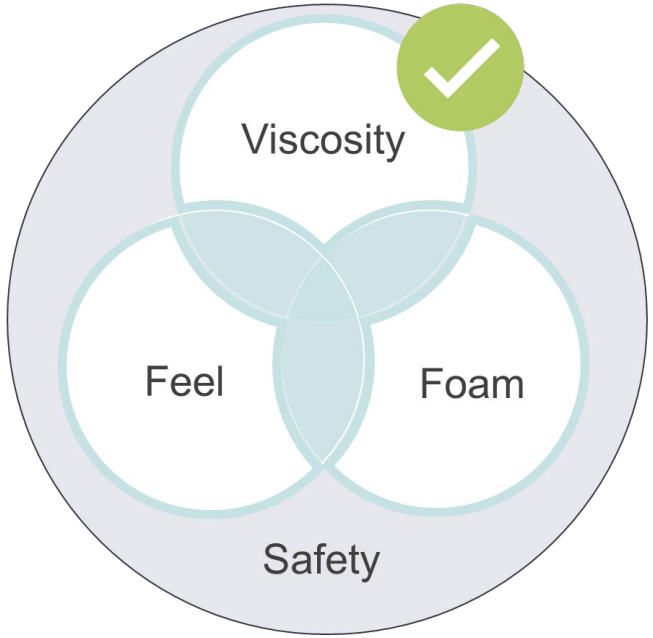
# #2 Opt for an Ingredient That Removes the Need for Salt

# Having Improved Our Formula's Viscosity… Let's Move on to Foam!




## Innovative Perspectives for Viscosity

#1 **Add a minor addition** that allows you to lower actives

#2 **Opt for an ingredient** that removes the need for salt

# Stepan Personal Care's Dynamic Duo for Foam

| | LATHANOL® LAL<br>INCI: Sodium Lauryl Sulfoacetate | STEOL® CS-270 ULTRA<br>INCI: Sodium Laureth Sulfate |
|---|---|---|
| **Safety** | | |
| **ISO 16128 Score*** | 0.86 | 0.75 |
| **Free From** | Sulfates, EO, Preservatives, Polymers | UP Low 1,4-Dioxane |
| **Irritation Potential**<br>(Zein, 1-100 Scale, Lower is Better) | 55 | 67 |
| **Actives %** | 65 | 68 – 72 |
| **Active Use Level %** | 0.5 – 5.0 | 0.5 – 12.0 |
| **Handling** | Coarse Solid | Paste |
| **Additional Cost** | Medium | Low |
| **Lab Workup** | >50°C to Dilute Solids | >50°C to Dilute Solids |

*Stepan calculates Natural Origin Content based on biorenewable carbon content and excludes balance water and impurities/byproducts

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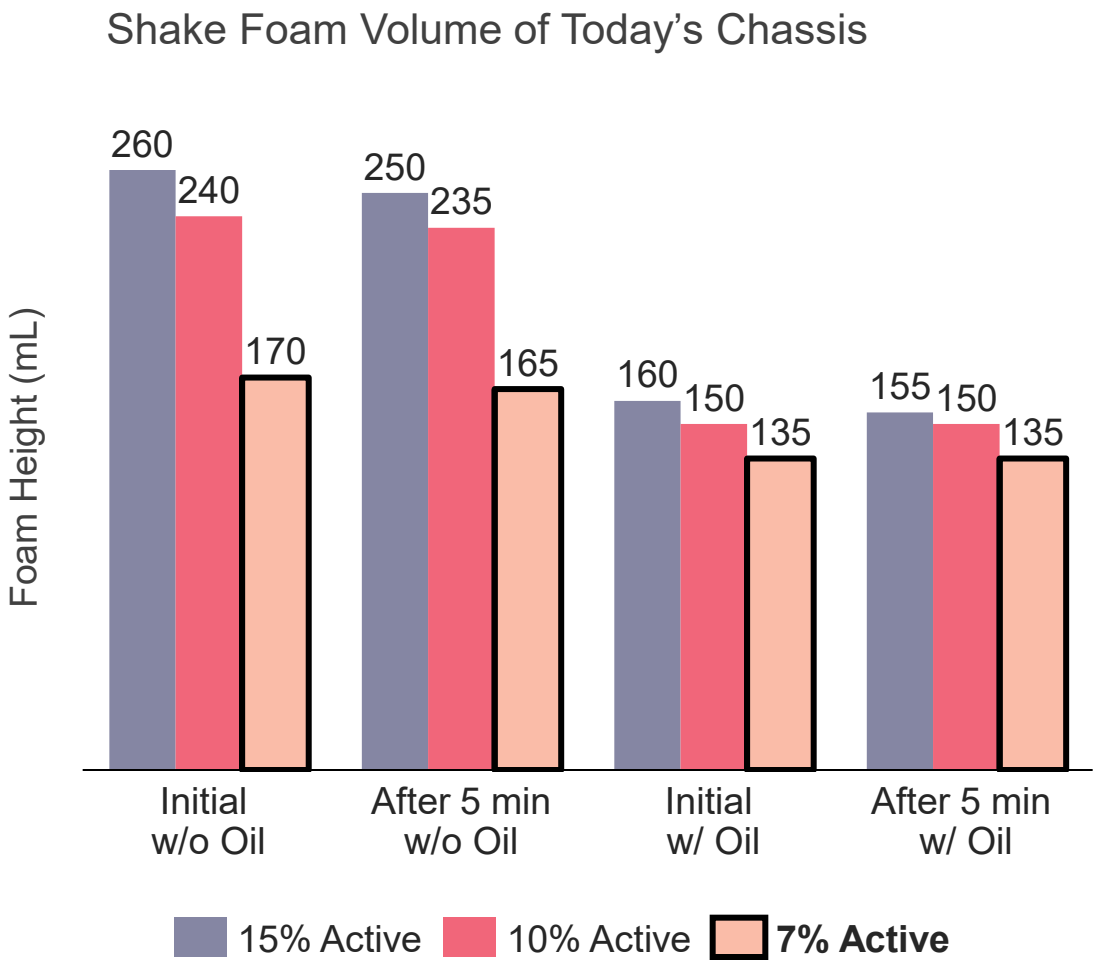
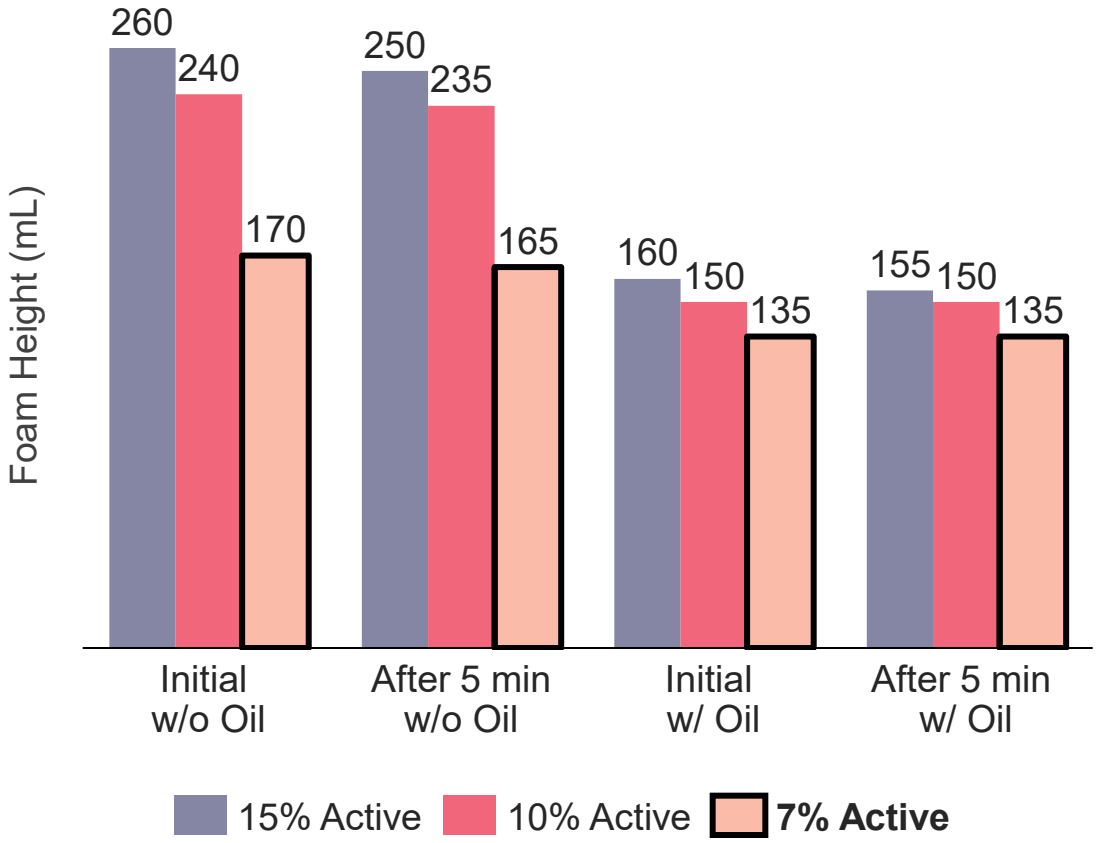
# Reaching Foam Targets Typically Requires Higher Actives

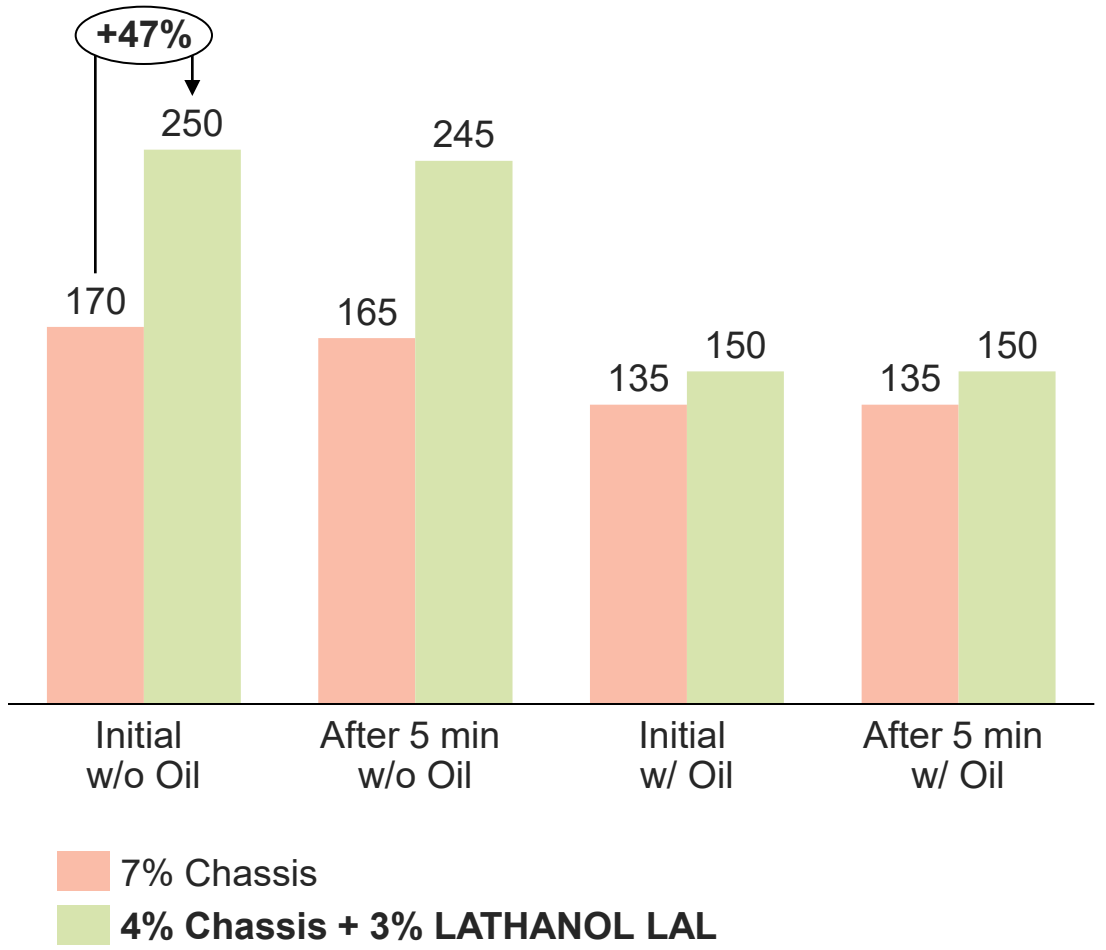


# #3 Find a Foamer That Provides Big Impact

Shake Foam Volume of Today's Chassis




Shake Foam Volume of 7% Active Total Surfactant

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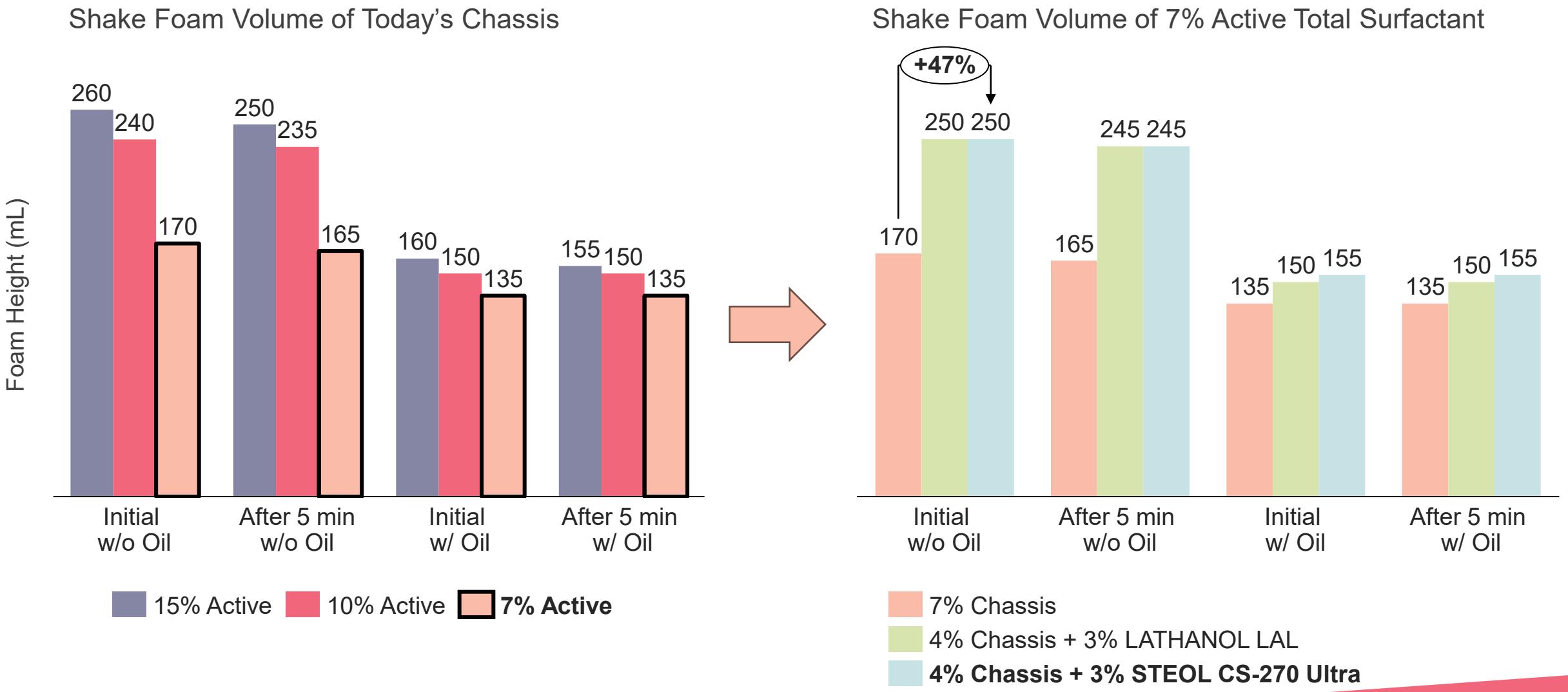
# #4 Don't Overlook Traditional Options



# If I See It, I Believe It!

**10% Active Chassis**

- ✓ Medium bubbles

**7% Chassis with LAL**

4% Chassis + 3% LATHANOL LAL

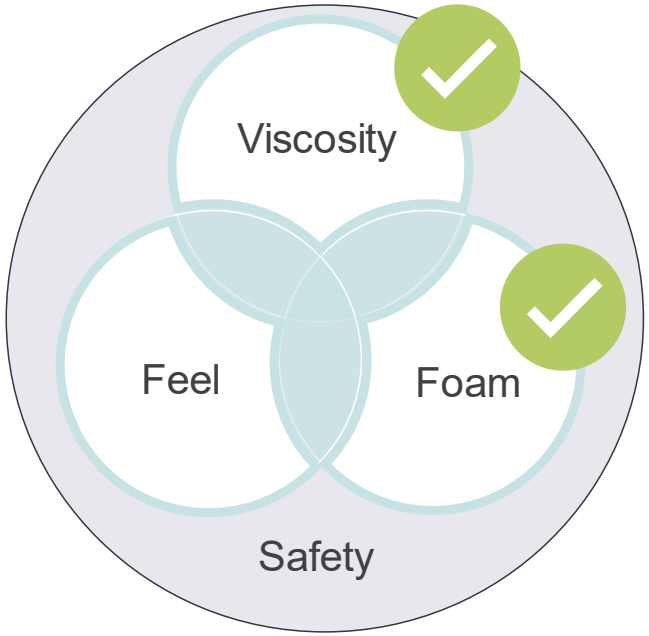
- ✓ Very fine, stable bubbles
- ✓ Tighter, creamier foam

**7% Chassis with CS-270**

4% Chassis + 3% STEOL CS-270 ULTRA

- ✓ Larger, stable bubbles
- ✓ Quick flash foam

# Having Improved Our Formula's Viscosity & Foam… Let's Move on to Feel!




## Innovative Perspectives for Viscosity

#1 **Add a minor addition** that allows you to lower actives

#2 **Opt for an ingredient** that removes the need for salt

## Efficient Techniques for Foam

#3 **Find a foamer** that provides big impact at lower levels

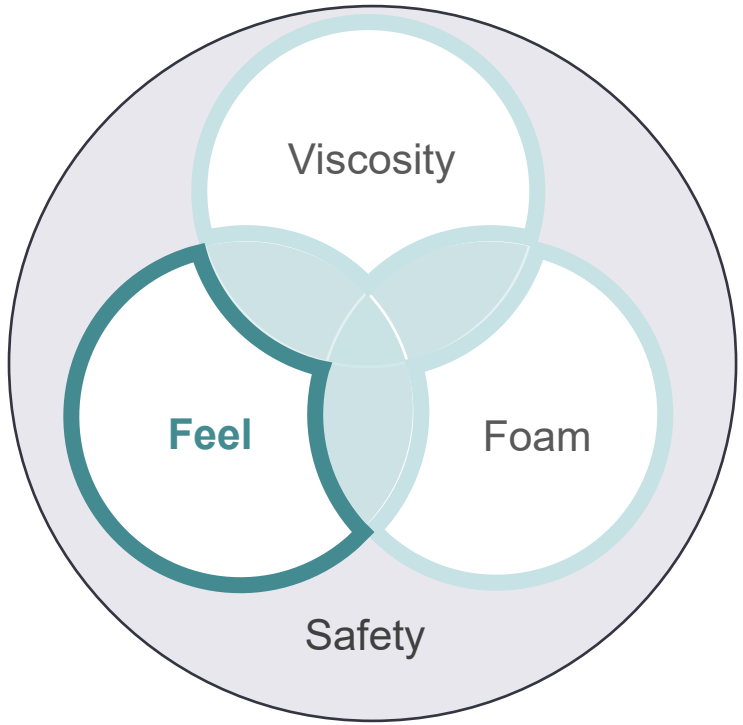
#4 **Don't overlook** traditional options for foam generation

# Feel Challenges for Formulators

Traditional surfactants leave the skin feeling too tacky, which requires adding high-cost ingredients or leaving it as-is

Creating “hard” claims to meet regulatory requirements takes long testing cycles, so best to stick to consumer perception alone

Cleaning is no longer enough, as consumers want the perception of moisturization and improved skin health with their products



# Stepan Personal Care's Dynamic Duo for Feel

| | | MAPROSYL® 25G-HP<br>INCI: Sodium Cocoyl Glutamate | STEPAN-MILD® GCC<br>INCI: Glyceryl Caprylate/Caprate |
|---|---|---|---|
| Safety | **ISO 16128 Score*** | 1.0 | 1.0 |
| | **Free From** | Sulfates, EO,<br>Preservatives, Polymers | Sulfates, EO,<br>Preservatives, Polymers |
| | **Irritation Potential**<br>(Zein, 1-100 Scale, Lower is Better) | 38 | Non-Irritating to Skin & Eyes |
| | **Actives %** | 25 | 100 |
| | **Active Use Level %** | 1.0 – 5.0 | 0.5 – 5.0 |
| | **Handling** | Clear Liquid at RT | Clear Liquid at 45°C |
| | **Additional Cost** | Low | Low |
| | **Lab Workup** | Back-Add and Mix | Back-Add and Mix |

*Stepan calculates Natural Origin Content based on biorenewable carbon content and excludes balance water and impurities/byproducts

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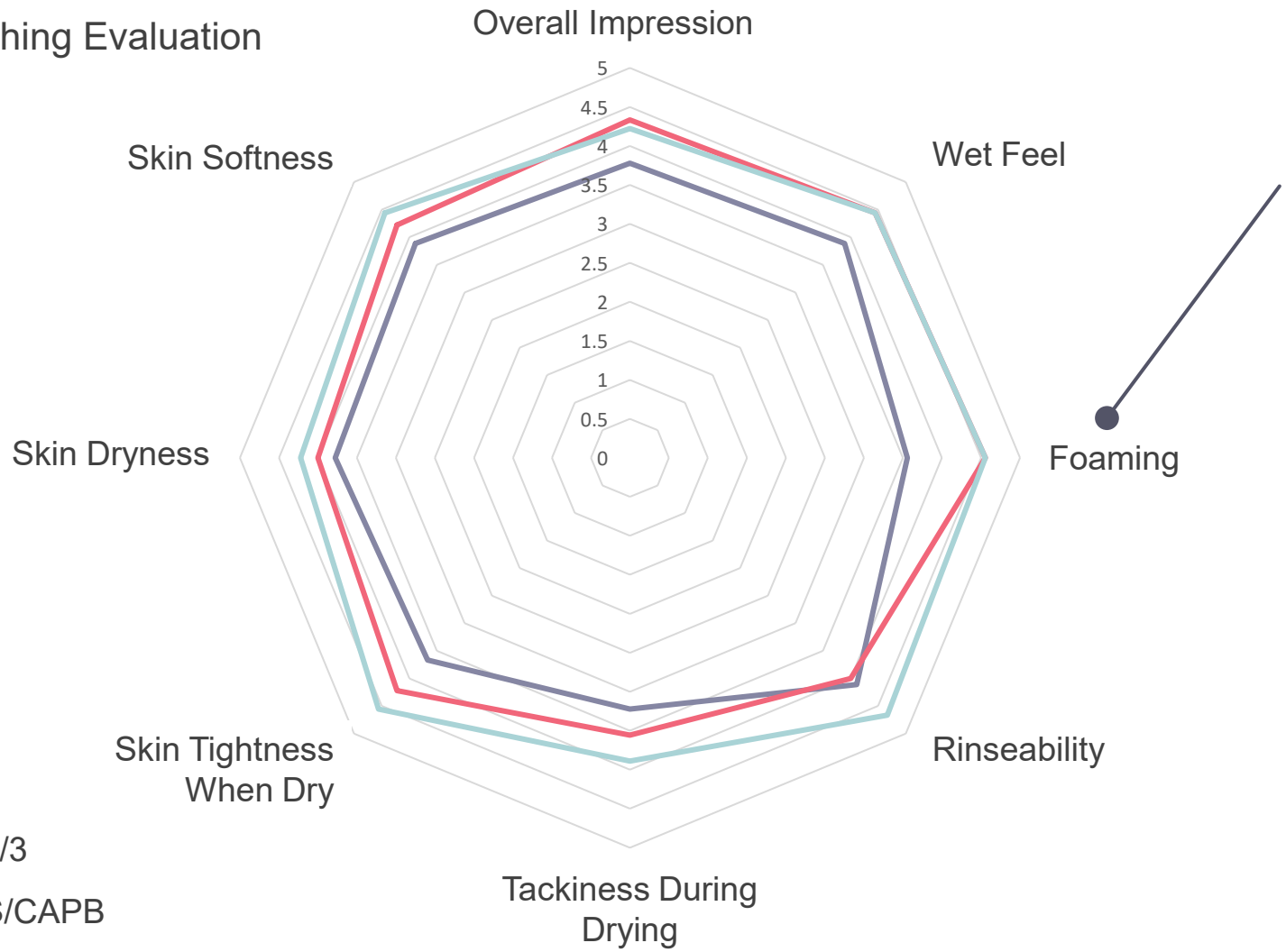
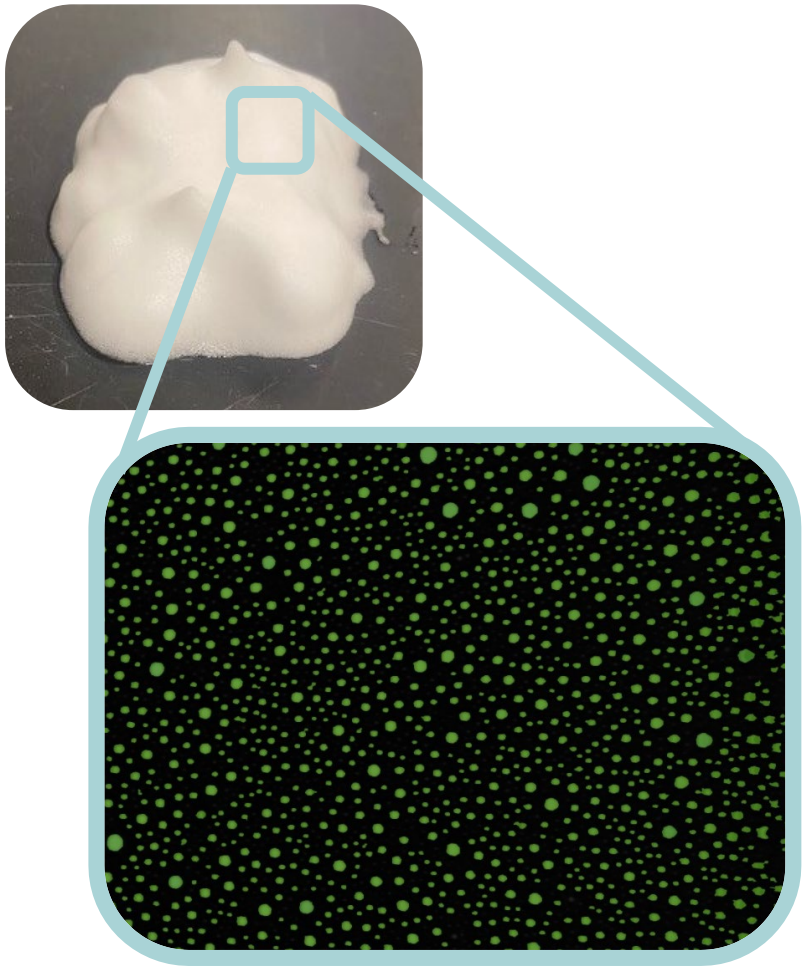
# #5 Swap Out for an Amino Acid Surfactant

Hand Washing Evaluation
7 Panelists




Actives*: 12/3

- SLES/CAPB
- AOS/CAPB
- AOS/**MAPROSYL 25G-HP**



Dynamic Foam Analysis
100mm$^2$ area

*SLES = Sodium Laureth Sulfate, AOS = Alpha Olefin Sulfonate, CAPB = Cocamidopropyl Betaine

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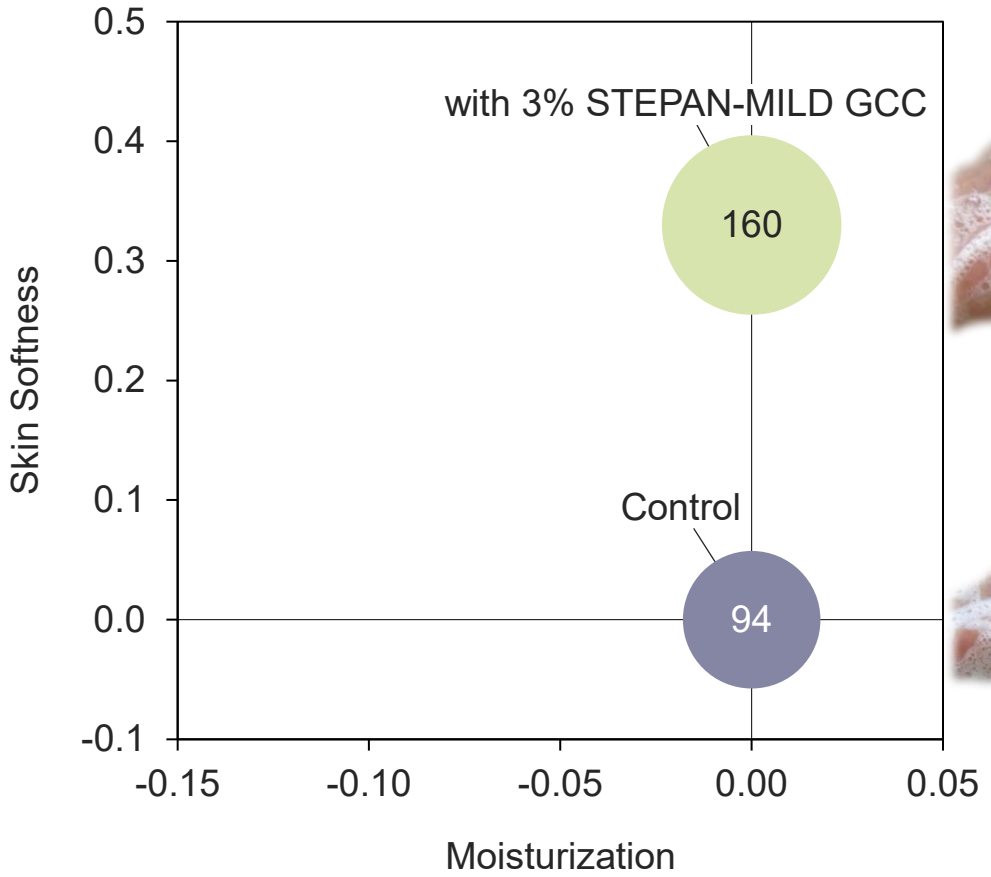
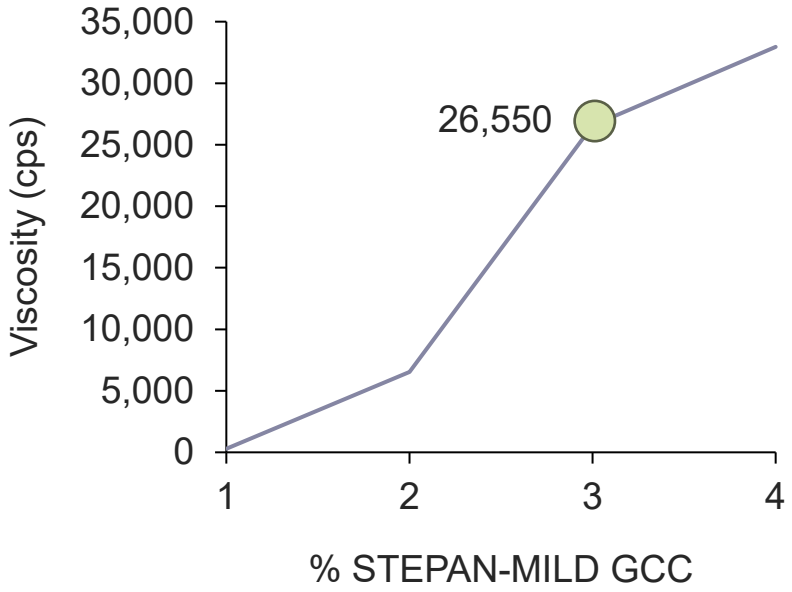
# #6 Be Flexible with a Sulfated System

**Skin Feel** of Standard Sulfate Chassis*
Bubble Size = Foam Volume (mL)




**Foam**

**Viscosity**




*12% Active Sodium Laureth Sulfate, 3% Active Cocamidopropyl Betaine

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# Let’s Wrap It Up!

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# Formulation “Hacks” to Take Back to the Bench!

## Innovative Perspectives for Viscosity

#1 **Add a minor addition** that allows you to lower actives

#2 **Opt for an ingredient** that removes the need for salt

## Efficient Techniques for Foam

#3 **Find a foamer** that provides big impact at lower levels

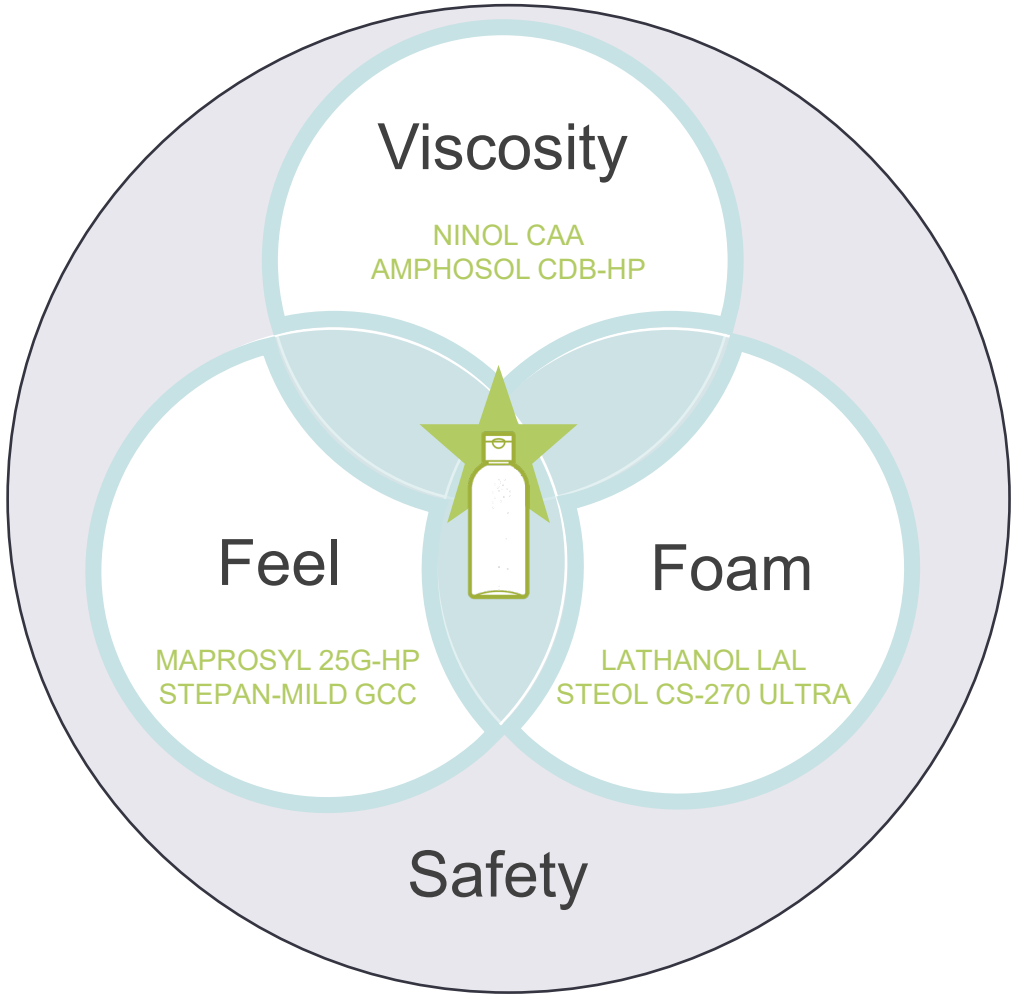
#4 **Don’t overlook** traditional options for foam generation

## Game-Changing Insights for Feel

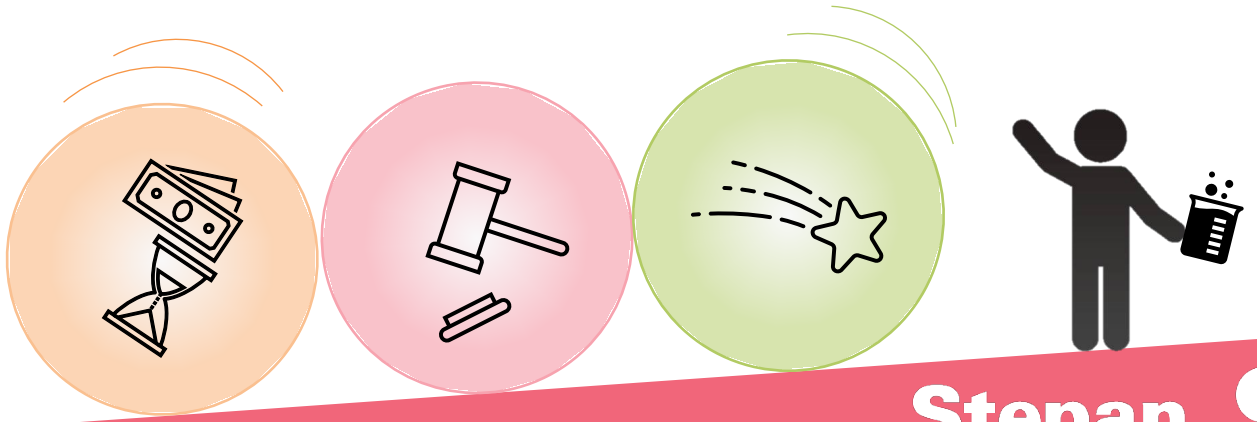
#5 **Swap out** a traditional secondary for an Amino Acid Surfactant

#6 **Be flexible** with a sulfated system

# Our Portfolio's "Duos" Make Formulating More Efficient




Say "goodbye" to worrying about balancing on those formulation challenges!



# Our “Hacks” Meet the Consumer Needs

## Feel

*When I’m done using it,*
***my skin feels smooth!***

## Foam

*When I’m using it to clean,*
***there are lots of bubbles!***

## Viscosity

*When I put it on my hand,*
***it is thick & substantial!***

## Safety

*When it touches my body,*
***I feel safe using it!***

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# Struggling with a Formula?

Stepan's **Virtual Collaboration Lab** is available to you for live demonstrations or formulation troubleshooting!

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

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