Shampoo
Formulation Guide
EMEA Region

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 foam	Amphoteric Surfactant	10-20
Improve cleaning and viscosity building	Nonionic Surfactant	2-8
Incorporate moisturizing feel	Emollient, Humectant	0-5
Enhance the sensory appeal	Fragrances, Dyes	0-3
Build higher viscosity	Thickener, Salt	0-2
Create clear appearances	Solubilizer	0-2
Provide differentiated claims	Vitamins, Actives, Oils	0-1
Prevent growth of microbes	Preservative	0-2

Getting From Lab to Shelf — Building Up the Formula

The next step is to think about the 3 P's of your formula — Procedure, Parameters and Packaging. Here you'll find tips and recommendations to support your product development.

Procedure

1. Start with water
2. Add thermo-stable, water-soluble ingredients
3. Pre-mix oil-soluble ingredients with solubilizers
4. Add solubilized ingredients
5. Mix until homogeneous
6. Adjust viscosity with thickeners and/or salt
7. If heating, add fragrances and temperature sensitive ingredients at < 40°C (104°F)
8. Adjust pH
9. Add sensory enhancers

Parameters

Appearance: Clear or pearlized

Viscosity: 0-20,000 cps

pH: Target 5-7

Stability: Min. 1 month at room temp (25°C), cold (5°C) and elevated (45°C)

Micro Robustness: Preservative challenge testing for higher water content formulas (> 30%)

Packaging

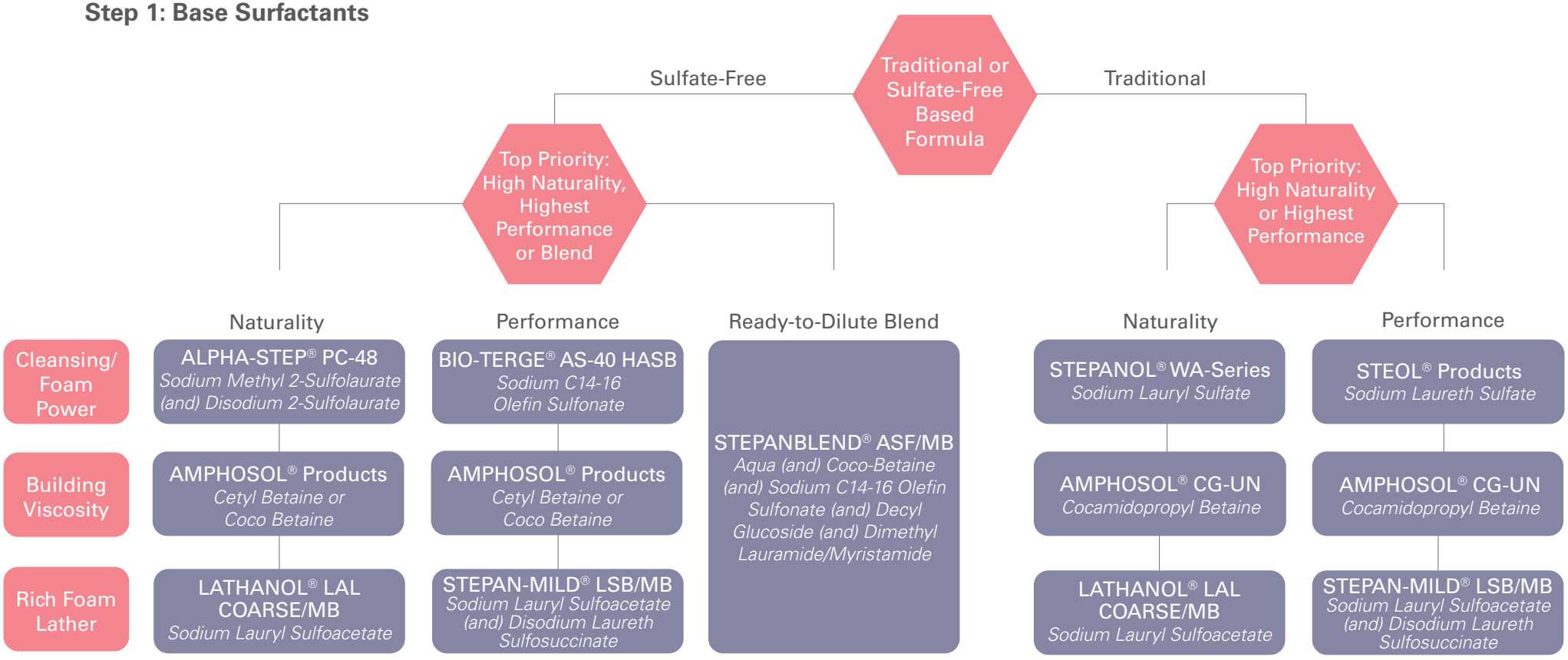
Pump:
Low Viscosity: < 2,000 cps
Surfactant Actives: 5-8%

Flip Cap:
High Viscosity: > 4,000 cps
Surfactant Actives: 12-15%

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 additive(s) 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



Step 2: Aesthetics

Conditioned Feel and Foam Boosters

- **STEPAN-MILD® GCC/MB** — *Glyceryl Caprylate/Caprate*
- **STEPAN-MILD® GCC-FL/MB** — *Glyceryl Caprylate/Caprate (and) Glycerin (and) Propanediol*

Natural Silicone Alternative

- **STEPAN-MILD® L3-G/MB** — *Lauryl Lactyl Lactate*

Viscosity Booster and/or Fragrance Solubilizer

- **NINOL® CAA** — *Dimethyl Lauramide/ Myristamide*

Get Inspired — Finalized Formulations

Let Stepan Personal Care help jump-start your next development project with a variety of shampoo concepts.

Economic and Eco-Friendly Sulfate-Free Shampoo *Formulation No. 1644*
The Personal Care Surfactants Market is prioritizing lower 1,4-Dioxane levels in North America and Europe, while adapting to new European deforestation regulations (EUDR). This sulfate-free shampoo uses BIO-TERGE® AS-40 HASB and AMPHOSOL® CG-UN as effective replacements for the traditional Sodium Laureth Sulfate/Cocamidopropyl Betaine (SLES/CAPB) base. **LEARN MORE**

Phase	Ingredient	% by weight
A	Deionized Water	34.03
	Polyquaternium-10	0.20
B	Deionized Water	34.03
	BIO-TERGE® AS-40 HASB	**17.81**
	AMPHOSOL® CG-UN	**11.28**
C	**STEPAN-MILD® L3-G/MB**	**0.85**
	Euxyl™ K712 (Schulke & Mayr)	0.80
	Fragrance	0.20
	Dye	q.s.
	Citric Acid	q.s.
	Sodium Chloride	0.80

"Super Easy to Make" Mild, Sulfate-Free Shampoo *Formulation No. 1541*
Diversify your portfolio with STEPANBLEND® ASF/MB, a sulfate-free concentrated surfactant blend with a mild profile. STEPANBLEND® ASF/MB is suitable for wide range of cleansing products such as hand washes, shower gels or shampoos, and is designed for ease of use and cold processing. This concentrate provides excellent foaming and only requires dilution with water to the desired actives level, pH adjustment and the addition of fragrance and salt to adjust viscosity levels. **LEARN MORE**

Utilize Stepan's Formulation Finder for more concepts or Contact Us for personalized formulation support.

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