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BE UNIQUE with innospec

Formulation Guide 2025

Formulation Guide

BE UNIQUE
with innospec

Each consumer has different expectations from the beauty products they use, depending on their generation. As manufactures and suppliers of ingredients for beauty and personal care, we have the expertise, creativity and knowledge to inspire your next formulations, with endless opportunities for any generation.

The following pages showcase our hero products in a number of formulations inspired by five generations. Each one has a story and tips on how to overcome particular issues when formulating. Use our ingredients to help make your next unique product come to life.

Baby boomers

Defy expectations

Formulations designed
to retain, preserve and protect
skin and hair

Generational needs

Baby Boomers (1946 - 1964)

Baby Boomers represent a vital consumer segment in the personal care market, seeking products that align with their evolving lifestyles. Health and wellness take center stage for this generation, prompting a demand for age-specific solutions, including skin and hair care products that address visible signs of aging.

Brand loyalty runs deep; they prefer established names renowned for quality and safety. Increasingly, Baby Boomers are conscious of their purchasing impact, choosing brands that practice sustainability and social responsibility. They aim to look and feel their best at any age: this translates to a demand for high-quality, effective personal care products, including moisturizers, anti-aging treatments, hair care products, and cosmetics. They want to embrace aging with confidence and feel good in their own skin.

By understanding and catering to the distinct needs of each generation, we are committed to providing innovative and effective personal care solutions for all.

Defy expectations and explore Innospec's range of detox shampoos and hydrating cleansers, tailored to meet Baby Boomers' beauty care needs.

Bee Yan Tan
Customer Technical
Service Manager,
Personal Care ASPAC

A note from the expert

The Wonderful Whip Facial Cleanser

The popularity of whipped facial foams is on the rise as they offer a unique combination of sensorial enjoyment, and efficacy that traditional cleansers often lack.

The Wonderful Whip has been designed to meet the Baby Boomers need for a product that brings effective cleansing, removes impurities, dirt, excess sebum, and product residue, even those that are more difficult to eliminate. While they want their skin to look clean and refreshed, Baby Boomers prioritize gentleness, recognizing that mature skin can be more fragile and prone to dryness or irritation.

This foaming cleanser is sulfate-free and minimizes irritation on the skin. With its creamy foam texture, it is an ideal option for those with sensitive skin and provides a soothing cleansing experience.

Hero ingredients

EMPICOL® CED5
(Laureth-5 Carboxylic Acid)

EMPIGEN® BS/FA
(Coamidopropyl Betaine)

EMPIGEN® CDR 60
(Sodium Cocoamphoacetate)

EMPIGEN® S18
(Stearamidopropyl Dimethylamine)

EMPIGEN® CBET
(Coco Betaine)

Iselux®
(Sodium Lauroyl Methyl Isethionate)

Natrlquest® E30
(Trisodium Ethylenediamine Disuccinate, EDDS)

NANSA® LSS 38/AV
(C14-C16 Alpha Olefin Sulfonate)

NANSA® PC 38/F
(Potassium Cocoate)

Pureact I-78C
(Sodium Cocoyl Isethionate)

Pureact WS CONC
(Sodium Methyl Cocoyl Taurate)

Pureact SCG
(Sodium Cocoyl Glycinate)

Pureact Gluco D
(Decyl Glucoside)

Motivation for the formulation

Copper's role in hair

Copper is a trace element that's important for hair colour and maintaining the structure of the hair shaft. However, copper can also cause problems for hair, such as:

- Making blonde hair look greenish.
- Weighing hair down and making it feel dry.
- Preventing chemical services from working.
- Accelerating UV damage.

Copper chelation in hair care is a process that removes copper and other mineral buildup from hair using chelating shampoos or treatments. Chelating shampoos are more acidic than regular shampoos and can contain ingredients like Trisodium Ethylenediamine Disuccinate, EDDS, which dissolves ions and limescale.

Chelating shampoos can be used to remove mineral buildup that can cause hair to lose its shine and volume.

Here, Innospec have designed just that, following a trend on the market known as Metal Detox shampoos. This is a cost effective shampoo which is >90% naturally derived according to ISO16128.

Hero ingredients

Natrlquest® E30 (Trisodium Ethylenediamine Disuccinate, EDDS) is a biodegradable chelant with high affinity for copper.

The combination of **NANSA® LSS 38/AV** (Sodium C14-16 Olefin Sulfonate), **Iselux®** (Sodium Lauroyl Methyl Isethionate), **EMPIGEN® BS/FA** (Coamidopropyl Betaine) and **EMPIGEN® CDR 60** (Sodium Cocoamphoacetate) results in a low cost, sulfate free, salt thickened chassis with good foam.

EMPIGEN® S18 (Stearamidopropyl Dimethylamine) is a multifunctional ingredient that offers conditioning benefits such as reduction of static, improvement of combing and increase of shine. It can also be used as a rheology modifier to suspend pearling agents and to enhance the solubilisation of oils.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		20.00
	Glycerin	Vegetable Glycerine (Naissance)	2.00
	Guar Hydroxypropyltrimonium Chloride	Naternal® Excel (Syensqo)	0.25
	Citric Acid	Citric Acid Solution (50% w/w)	Trace
B	Aqua		q.s. to 100
	Sodium C14-16 Olefin Sulfonate	NANSA® LSS 38/AV (Innospec)	15.00
	Sodium Lauroyl Methyl Isethionate	Iselux® (Innospec)	2.50
	Trisodium Ethylenediamine Disuccinate	Natrlquest® E30 (Innospec)	0.50
	Stearamidopropyl Dimethylamine	EMPIGEN® S18 (Innospec)	0.50
C	Cocamidopropyl Betaine	EMPIGEN® BS/FA (Innospec)	7.00
	Sodium Cocoamphoacetate	EMPIGEN® CDR 60 (Innospec)	3.00
D	Fragrance	Mars AF G32203 (Azur Fragrances)	0.30
E	Sodium Benzoate	Sodium Benzoate	0.50
	Phenoxyethanol	Microcare® PE (Thor)	0.50
	Benzyl Alcohol	Microcare® BNA (Thor)	0.40
F	Citric Acid	Citric Acid Solution (50% w/w)	q.s. to pH 5.5 - 6.0
G	Sodium Chloride	Sodium Chloride	q.s. to 5,000 - 8,000cP

Preparation procedure

1. Premix Naternal® Excel with glycerin then add the premix into 20% of aqua with stirring. Swell the Naternal® Excel by adding a few drops of Citric Acid solution.
2. In the main vessel add in phase B stepwise before heating to 65°C. Continue to heat and mix until EMPIGEN® S18 is fully dissolved.
3. Stop heating the batch and add in phase C with stirring. Add in the phase A premix and mix until homogenous.
4. Once the batch has cooled to 40°C add in phase D, ensuring the fragrance is fully emulsified.
5. Add in phase E stepwise and mix until homogeneous.
6. Adjust the pH to 5.5 - 6.0 with Citric Acid solution.
7. Thicken the formulation with Sodium Chloride to 5,000 - 8,000 cP Brookfield RV, #5, 20°C, 20rpm.

Properties

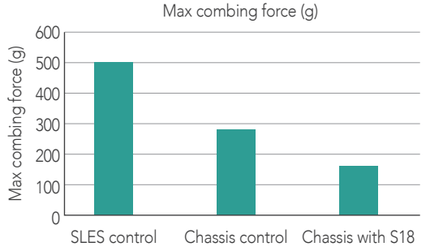
Appearance:	Light yellow, clear liquid
pH:	5.3 - 6.0
Viscosity:	5,000-8,000 cP Brookfield RV, #5, 20°C, 20rpm
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

This Innospec Metal Detox Shampoo formulation has been designed with an optimum combination of surfactants to give cost effective enhanced creamy foam. The addition of a small amount of Iselux® (Sodium Lauroyl Methyl Isethionate) boosts the foam of NANSA® LSS 38/AV (Sodium C14-16 Olefin Sulfonate) and optimizes the salt curve allowing easy electrolyte thickening.

Chassis no Iselux®

Chassis with Iselux®



Texture Analyser Dry Combing Data shows how EMPIGEN® S18 reduces combing forces

Without EMPIGEN® S18

With EMPIGEN® S18

EMPIGEN® S18 is added to the formulation to give hair conditioning, frizz reduction and anti-static.

Motivation for the formulation

Whip cleansers are a popular trend in Japan and South Korea. There is a desire for a squeaky-clean skin feel alongside a luxurious whip texture and creamy lather.

This is a cleansing foam with soft whipping cream texture. Whip facial foams are a trend because they can be fun, gentle, and effective:

- Fun: Lathering products can be more enjoyable than non-lathering ones.
- Gentle: A light, foamy cleanser can reduce friction and irritation on the skin, making it a good option for sensitive skin.
- Effective: Foaming cleansers can remove dirt, oil, and makeup from deep within pores.
  They can also help prevent acne by removing excess oil.

Designed by our team in Asia Pacific, this formulation is light, airy and fun to use. It contains a range of our sulfate-free surfactants.

Here we have compared it to a popular commercial benchmark. We have matched the texture but with a sulfate free INCI.

Hero ingredients

This formulation uses an optimized combination of **Pureact I-78C** (Sodium Cocoyl Isethionate) and **Glycerin** to create a firmness in the formulation that forms the whip texture.

NANSA® PC 38/F (Potassium Cocoate) is a potassium fatty acid soap that is a naturally derived, gentle soap for that squeaky clean feeling.

A combined chassis of **EMPIGEN® CBET** (Coco Betaine), **Pureact WS Conc** (Sodium Methyl Cocoyl Taurate) and **Pureact SCG** (Sodium Cocoyl Glycinate) has been designed to give a stable, luxuriously, creamy lather.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Glycerin	Glycerine	15.00
B	Sodium Cocoyl Isethionate	Pureact I-78C (Innospec)	22.76
	Sodium Methyl Cocoyl Taurate	Pureact WS Conc (Innospec)	20.00
	Sodium Cocoyl Glycinate	Pureact SCG (Innospec)	4.39
	Coco-Betaine	EMPIGEN® CBET (Innospec)	2.86
	Potassium Cocoate	NANSA® PC 38/F (Innospec)	0.86
C	Glycerin	Glycerine	5.00
	Polyquaternium-67	SoftCAT™ SL30 (Dow Chemical)	0.15
	Sodium Hyaluronate	HYA-ACT™ M (DSM-Firmenich)	0.05
D	Glycerin (and) Cellulose (and) Cellulose Gum	Arbalon™ R-50 Cellulose Liquid (Lubrizol)	3.00
E	Sodium Chloride	Sodium Chloride	0.70
	Citric Acid	Citric Acid Solution (50% w/w)	q.s. to pH 5.0 - 5.5
	Trisodium Ethylenediamine Disuccinate	Natrlquest® E30 (Innospec)	0.10
F	Phenoxyethanol (and) Ethylhexylglycerin	Euxyl® PE 9010 (Ashland)	0.30
	Ethylhexylglycerin	Sensiva™ SC 50 (Ashland)	0.10
	1,2 Hexanediol	1,2 Hexanediol	2.00
	Fragrance	Aquatic Splash 15983 (Bell Flavor and Fragrances)	0.37

Preparation procedure

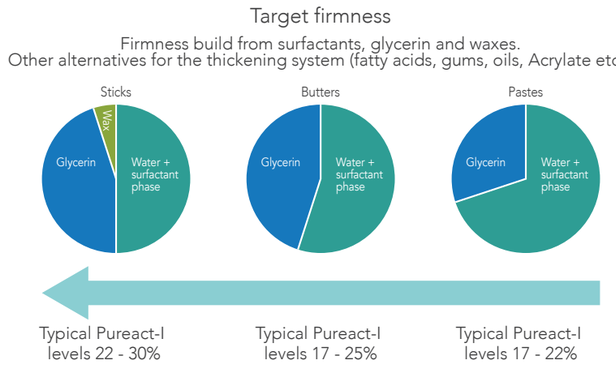
1. Charge water into the main vessel. Add Glycerin.
2. Add phase B all ingredients in sequence into the vessel. Place beaker in a water bath heated to 80 - 85°C. Mix the content in the beaker under overhead stirrer at 250 rpm with a pitched blade impeller and heat to 75°C - 80°C. Stir until all the solids have dissolved completely and mixture is clear.
1. Prepare phase C premix in advance. Add phase C slowly and gradually into main vessel at 300 rpm. Stir for at least 10 minutes at 250 rpm until bulk is homogeneous.
4. Add phase D slowly and gradually in a dropwise manner into main vessel at 300 rpm. Stir for at least 10 minutes at 250 rpm until bulk is homogeneous. Remove heat and start to cool down.
5. While cooling down, add sodium chloride and stir for 5 minutes. Adjust pH with citric acid to target range and mix well. Add Natrlquest® E30 into bulk while stirring at 250 rpm.
6. At below 40°C, add preservative and fragrance. Mix until uniform.
7. Allow bulk to cool down with stirring to 35 - 36°C. Pour into final container and allow cool at 20°C for 24 hours to build final structure and viscosity.

Properties

Appearance:	White, semi-solid paste
pH:	5.0 - 5.5
Stability:	12 weeks, 45°C, 25°C, 5°C

Tips, tricks and more information

As this is such a concentrated formulation a little goes a long way. It could be packaged in a plastic or aluminium tube or in a pot or jar. Create your perfect texture with an optimized combination of surfactant and glycerin.

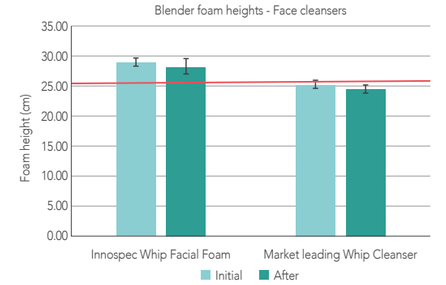


Market leading soap base cleanser

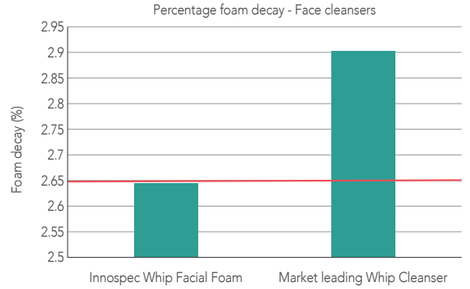
The Wonderful Whip Facial Cleanser
Creamy foam with more volume

Benchmark INCI: Aqua, Glycerin, Myristic Acid, Palmitic Acid, Potassium Hydroxide, Glycol Distearate, Dipropylene Glycol, Sorbitol, Stearic Acid, Lauric Acid, Lauryl Betaine, Polyquaternium-7, Sodium Chloride, Poylquaternium-6, Sodium Acetylated Hyaluronate, Sericin, Sodium Hyaluronate, Glyceryl Stearate SE, Synthetic Wax, Myristyl Betaine, Cetyl Betaine, Isopropyl Alcohol, Sodium Metabisulfite, Disodium EDTA, Bis-ethoxydiglycol Cyclohexane, 1,4-dicarboxylate, BHT, Citric Acid, Potassium Sorbate, Tocopherol, Sodium Benzoate, Parfum.

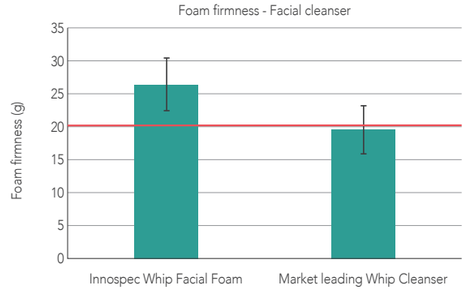
We conducted foam studies to compare Innospec's Wonderful Whip formulation to a market leading whip cleanser.



Innospec's Wonderful Whip generates a greater foam height and has a lower percentage of foam decay leading to a large, stable foam.



We measured the firmness of the generated foam.



Innospec's Wonderful Whip has a firmer foam compared to the Market Leading Whip Cleanser indicating a dense long-lasting foam that will impart a luxurious sensorial.

Motivation for the formulation

Shower oils are surging in popularity as they provide a luxurious alternative to a shower gel. They are an oil-based cleanser that you apply to wet skin in the shower. It's designed to nourish and moisturise the skin, leaving it feeling smooth and supple. Shower oils are particularly good for dry skin.

Benefits:

- Nourishes skin: Shower oils can help soothe and rejuvenate the skin.
- Protects skin barrier: Shower oils can help preserve the skin's natural moisture barrier.
- Good for shaving: Shower oils can help minimize trauma to the skin and reduce the risk of irritation.

A number of formulation concepts fit within the shower oil category:

- High glycerine formulations for an oily sensory texture.
- Oil based cleansers that contain oil soluble surfactants.
- Microemulsions with high oil content to give an oily sensory.

Hero ingredients

EMPICOL® CED5 (Laureth-5 Carboxylic Acid) is a key anionic surfactant technology compatible with non-ionics like **Pureact Gluco D** (Decyl Glucoside) to enable formation of a microemulsion whilst providing plenty of foam.

EMPIGEN® S18 (Stearamidopropyl Dimethylamine) is a multifunctional ingredient that can be used as a conditioning agent to reduce static, improve combing and increase shine; as a rheology modifier to suspend pearling agents; and, in this case, to enhance the solubilisation of Moringa oil.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		0.26
	Laureth-5 Carboxylic Acid	EMPICOL® CED5 (Innospec)	20.00
	Sodium Hydroxide	Sodium Hydroxide Solution (25% w/w)	q.s. to pH 4
B	Decyl Glucoside	Pureact Gluco D (Innospec)	24.00
C	Stearamidopropyl Dimethylamine	EMPIGEN® S18 (Innospec)	2.00
D	Aqua		46.00
E	Benzyl Alcohol (and) 1,2-Hexanediol	Microcare® HXDB (Thor)	1.40
F	Moringa Oleifera Seed Oil	Moringa Oil (Naissance)	2.00
G	Sodium Hydroxide	Sodium Hydroxide Solution (25% w/w)	q.s. to pH 4 - 6
H	Fragrance	Argan Luxury PF75107 (Sozio)	1.00

Preparation procedure

1. Charge phase A and heat to 65 - 75°C.
2. Add phase B while stirring.
3. Check pH is below 4.
4. Add phase C. Mix until homogeneous.
5. Cut off heating and add phase D to cool formulation down. Add phase E.
6. Add phase F with Silverson homogeniser. Mix until clear.
7. Add phase G and phase H with Silverson homogeniser. Mix until clear. Do not leave unattended as you need to stop when the formulation starts foaming.

Properties

Appearance:	Clear, yellow liquid
pH:	4 - 6
Viscosity:	Water thin
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

This is a challenging brief. Here we have included 2% of oil in our clear O/W microemulsion.

Homogenisation is needed to form the microemulsion, but be sure to stop once bubbles start forming.

For large batches introduce the oil using a Silverson to produce a clear solution.

On addition of fragrance and Sodium Hydroxide the solution will be hazy and become clear within 10 minutes.

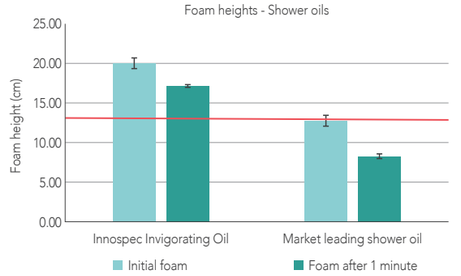
We have used Moringa oil but many oils can be used. Also, natural oils like almond, coconut, jojoba, and argan oil can be used in shower oils because they are known to moisturize skin.

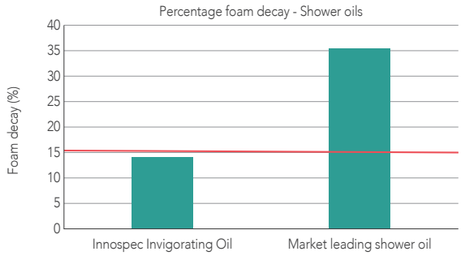
Market leading Shower Oil

The Invigorating Oil Shower Oil
Creamy dense foam

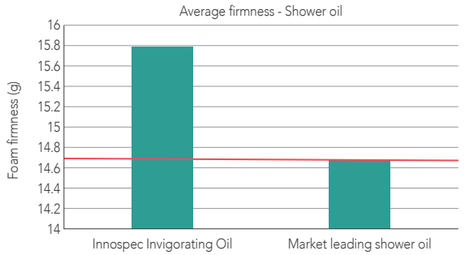
Benchmark INCI: Glycine Soja Oil, Laureth-4, MIPA-Laureth Sulfate, Ricinus Communis Seed Oil, Polaxomer 202, Parfum, Propylene Glycol, Panthenol, Tocopherol, Pantolactone, Citric Acid, Sodium Citrate, Aqua, Propyl Gallate.

We conducted foam studies to compare Innospec's Invigorating Oil formulation to a market leading shower oil.





It can be seen that Innospec's Invigorating Oil generates a greater foam height and has a lower percentage of foam decay leading to a stable foam.



Innospec's Invigorating Oil has a firmer foam compared to the market leading shower oil indicating a dense long-lasting foam that will impart a luxurious sensorial.

Gen X

Find new routines

Caring ingredients and
fresh formulations to update
your regime

The Popping Colour
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Generational Needs

Gen X (1965 - 1980)

Generation X seeks refreshing new products and effective ingredients to elevate their personal care routines as they begin to experience signs of aging. They're particularly attuned to changes in hair and skin condition and seek solutions that address moisture loss and promote vitality. Gen X consumers appreciate natural products that deliver visible results and prioritize multi-functional options that streamline busy lives.

Brand reliability is essential, as they gravitate toward familiar and trustworthy names that showcase innovation and inclusivity by representing diverse skin tones and body types, all while prioritizing sustainability through eco-friendly packaging in response to growing environmental awareness.

By understanding and catering to the distinct needs of each generation, we are committed to providing innovative and effective personal care solutions for all.

Find new routines with Innospec's mild shampoos and gentle skin cleansers, crafted to cater to Generation X's beauty care needs.

Peter Clark

Senior Applications Chemist,
Personal Care EMEA

A note from the expert

The Popping Colour Protection Shampoo

A colour protection shampoo is valuable for Gen X, a generation that cares about their image and often resorts to hair colouring for various reasons. For many people of this age, the appearance of grey hair is a natural event that can be perceived as a sign of the passage of time. Dyeing then becomes a way to maintain a more youthful appearance and feel comfortable with oneself. A colour protection shampoo, in this context, plays a fundamental role in preserving the vibrancy of the colour, while ensuring that the hair maintains a healthy and well-groomed appearance.

'The Popping Colour' is a low pH formula that protects the colour by closing the cuticle on the hair fibre. It has been designed to meet the needs of Gen X and, along with colour protection benefits, it gives good wet and dry conditioning performance, helping to keep healthy and beautiful hair over time.

Hero ingredients

EMPIGEN® HS/O-C
(Cocoamidopropyl Hydroxy Sultaine)

Iselux® SLC
(Sodium Lauroyl Methyl Isethionate
(and) Sodium Lauroamphoacetate
(and) Cocamide MIPA)

Luxuriact® PLUS
(Sodium Methyl Cocoyl Taurate)

Microsil® HAF-MV30
(Propoxytetramethyl Piperidinyl Dimethicone
(and)
Trideceth-6
(and) C11-15 Alketh-7)

NANSA® LSS 38/AV
(Sodium C14-16 Olefin Sulfonate)

Motivation for the formulation

As far back as ancient time, people would use natural extracts for cosmetic purposes including cleansing, styling, colouring, repairing, and protecting hair.

The importance of citric fruit such as lemons and lime juice in hair care is quoted throughout history, with organic fruit acid claiming to offer many properties and advantages during the washing and rinsing ritual.

Moreover, in recent times, hair care cosmetic formulation and technologies have focused attention on pH and the effects of organic acids on hair are becoming better recognized and products claiming pH benefits are finding their way onto shelves. Along with these products is an array of technical and sensory data to support these low pH hair care claims.

Scientific evidence suggests that organic acids at low pH offer a route to modify hair fibre properties to give damage repair and water uptake benefits.

Here we have used learnings on low pH formulations in combination with key hero ingredients from the Innospec portfolio to prevent colour loss from shampoo in this low pH colour protect shampoo.

Hero ingredients

This mild, sulphate-free shampoo has been designed to include **NANSA® LSS 38/AV** (Sodium C14-16 Olefin Sulfonate), a high foaming, low-cost, anionic surfactant stable at low pH.

This has been expertly combined with **EMPIGEN® HS/O-C** (Cocoamidopropyl Hydroxy Sultaine) to give clear formulations, not achievable with other amphoterics, and stable flash foam.

The combination of a tertiary surfactant **Luxuriact® Plus** (Sodium Methyl Cocoyl Taurate), a pourable liquid grade, gives added benefits in that it helps to increase deposition of conditioning agents.

The addition of cationic guar designed for clear systems and **Microsil® HAF-MV30** (Propoxytetramethyl Piperidinyl Dimethicone (and) Trideceth-6 (and) C11-15 Alketh-7), a silicone microemulsion that does not compromise viscosity or clarity to this formulation, gives good wet and dry conditioning performance with added colour protection.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Guar Hydroxypropyltrimonium Chloride	Naternal® Excel (Syensqo)	0.25
	Citric Acid	Citric Acid Solution (50% w/w)	0.01
B	Cocamidopropyl Hydroxysultaine	EMPIGEN® HS/O-C* (Innospec)	21.00
	Sodium C14-C16 Olefin Sulfonate	NANSA® LSS 38/AV (Innospec)	10.00
	Sodium Methyl Cocoyl Taurate	Luxuriact® Plus (Innospec)	15.00
C	Propoxytetramethyl Piperidinyl Dimethicone (and) Trideceth-6 (and) C11-15 Alketh-7	Microsil® HAF-MV30* (Innospec)	3.00
	Tetrasodium Glutamate Diacetate	Dissolvine® GL-38 (Nouryon)	0.20
D	Sodium Benzoate	Sodium Benzoate	0.50
	Potassium Sorbate	Potassium Sorbate	0.40
E	Fragrance	Himalaya AF J34263 (Azur Fragrances)	0.50
F	Citric Acid	Citric Acid Solution (50% w/w)	q.s. to pH 4.3 - 4.7

* Availability in Europe subject to REACH restrictions

Preparation procedure

1. Slowly add Naternal® Excel to vortex of mixing water to avoid clumps and mix until fully dispersed. Add 0.01% Citric acid solution to hydrate and swell guar. Mix until it becomes clear and uniform (A).
2. Slowly add EMPIGEN® HS/O-C and mix until clear and uniform (B).
3. Sequentially add surfactants in phase (C) and mix until clear and uniform.
4. Add Microsil® HAF-MV30 and Dissolvine® GL-38 and mix until uniform (D).
5. Add preservatives in (D) and mix until fully dissolved.
6. Add fragrance and mix until fully emulsified and clear (E).
7. Slowly add citric acid to adjust the pH to 4.7 - 4.3 (adjust pH, until desired viscosity obtained).

Properties

Appearance:	Clear yellow liquid
pH:	4.3 - 4.7
Viscosity:	4,000 - 6,000 cP Brookfield RV, #4, 20°C, 20rpm
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

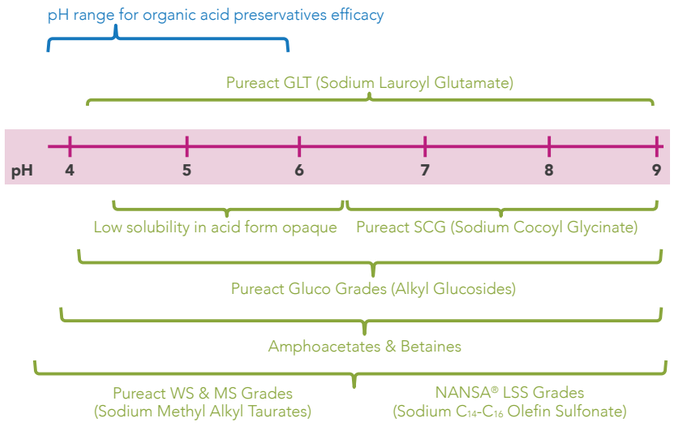
Tips, tricks and more information

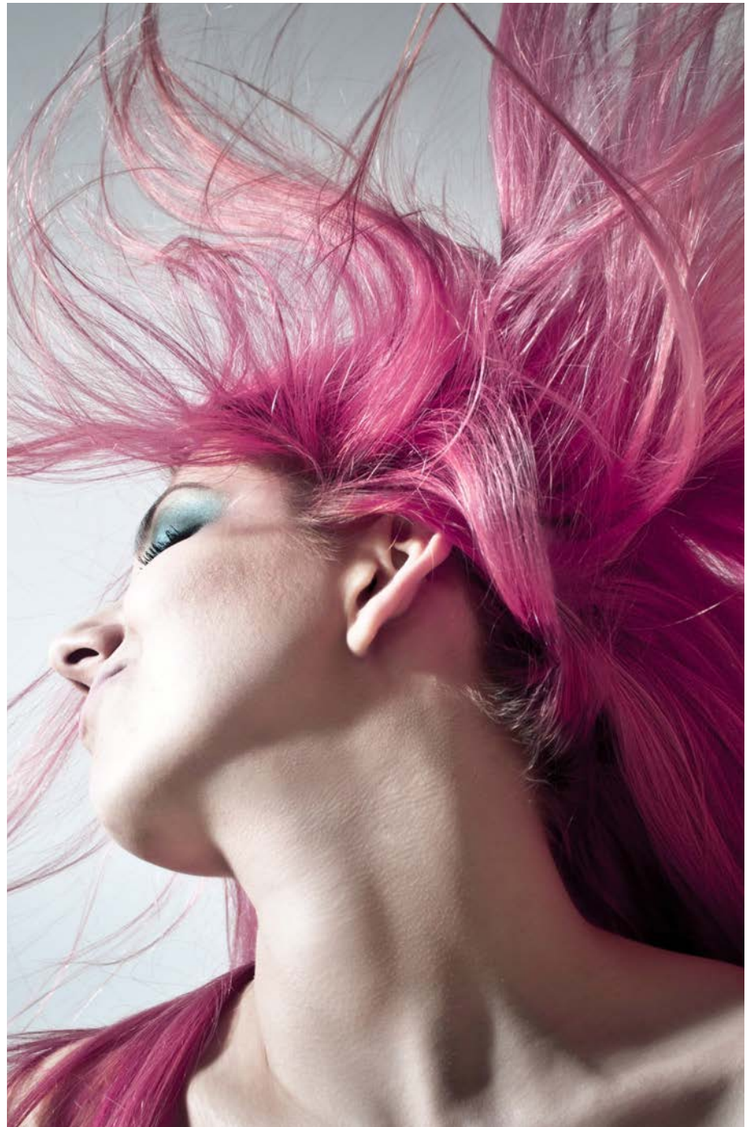
It is found that Taurate formulations at low pH can cause coacervation of cationic polymers leading to instability.

By using EMPIGEN® HS/O-C instead of Cocamidopropyl Betaine, this is prevented and clear, stable formulations can be achieved.

For low pH formulations, not all surfactants are compatible and stable. Innospec has a range of surfactants that are appropriate for low pH formulations.

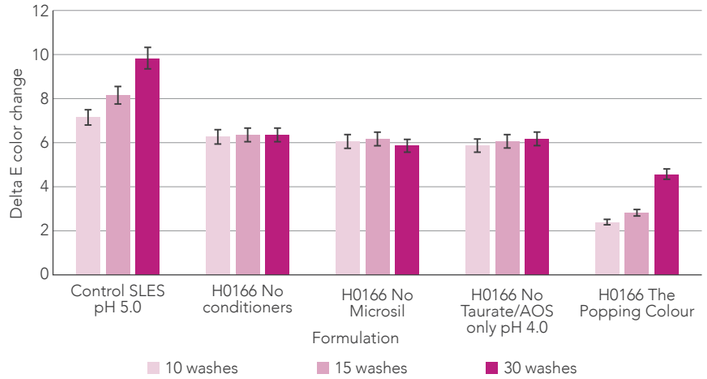
Recommended formulating pH ranges for Innospec Surfactants





To highlight the benefits of this shampoo we have conducted a series of standardised colour retention experiments. Using white yak hair dyed with vibrant red permanent hair dye they were treated with 5 different shampoos:

Use of low pH colour protection shampoo to prevent colour loss



- Control Shampoo, 12% SLES at pH 5.0.
- Chassis shampoo with no conditioning agents at pH 4.0.
- Chassis shampoo with no silicone at pH 4.0.
- Shampoo with a surfactant chassis of AOS only and not including Sodium Methyl Cocoyl Taurate or Cocoamidopropyl Hydroxy Sultaine at pH 4.0.
- Popping Colour Protection Shampoo at pH 4.0.

Colour measurements were taken before and after wash cycles. The difference in the red value was calculated, based on pre and post treatment measurements of each hair switch .

Results

The Popping Colour contains no conditioners, had less colour difference and gave a colour protection benefit over the SLES control shampoo especially after 30 washes. This shows that the tertiary surfactants alone at pH 4.0 have some colour protection benefit over SLES. The results show that the addition of the Propoxytetramethyl Piperidinyl Dimethicone (and) C11-15 Alketh-7 (and) Trideceth-6 further enhanced the colour protection properties of the shampoo slightly compared to the surfactants alone leading to strong colour protection benefits overall.

When the full chassis with only Sodium C14-16 Olefin Sulfonate and no Sodium Methyl Cocoyl Taurate or Cocoamidopropyl Hydroxy Sultaine is tested, colour protection is not as good as the full formulation. This shows the benefit of the secondary and tertiary surfactants in the deposition of conditioning agents which also enhance colour protection. Looking at The Popping Colour at pH 4.0 we see much less colour loss and colour protection. This is also very prominent between 10, 15 and 30 washes.

Motivation for the formulation

Glycerine is used in cleansers because it acts as a humectant, meaning it attracts and retains moisture on the skin, helping to keep it hydrated even after cleansing, making it suitable for all skin types, especially those prone to dryness, while still effectively removing dirt and oil without stripping the skin's natural barrier; it's also non-comedogenic, so it won't clog pores.

Key points about glycerine in cleansers:

- Hydrates the skin: Glycerine draws moisture from the air and deeper skin layers to the surface, keeping it supple and soft.
- Gentle on skin: Considered a safe and mild ingredient, suitable for most skin types, including sensitive skin.
- Non-comedogenic: Does not clog pores, making it a good choice for acne-prone skin.
- Natural component: Glycerine is naturally found in the skin, further contributing to its hydrating properties.

We see fundamental ingredients, such as glycerine, in the spotlight at the moment.

This formulation has glycerine at the heart of it, offering moisturization properties and a wonderful sensory. When applied to dry skin a gentle warming sensation can be felt. Upon wetting the skin a silky slippery feeling is given.

Hero ingredients

Iselux® SLC (Sodium Lauroyl Methyl Isethionate (and) Sodium Lauroamphoacetate (and) Cocamide MIPA) is a mild, sulfate-free blend which can be used cold process. It is a concentrated blend developed for use in formulating structured surfactant systems for sulfate-free personal care products. **Iselux® SLC** is optimized for the quick and easy development of stable finished products like creamy body washes and shampoos and can incorporate up to 20% of oils. In this case **Iselux® SLC** is compatible with the glycerine base and gives a wonderful gentle foam.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		1.50
	Sodium Benzoate	Sodium Benzoate	0.50
B	Glycerin	Vegetable Glycerine (Naissance)	62.43
	Pentylene Glycol	Pentylene Glycol	8.70
	Sodium Lauroyl Methyl Isethionate (and) Sodium Lauroamphoacetate (and) Cocamide MIPA	Iselux® SLC (Innospec)	25.70
	Citric Acid	Citric Acid Solution (50% w/w)	0.94
C	Fragrance	Blue Ocean 3 AR888224 (CPL Aromas)	0.23

Preparation procedure

1. Mix (A) until sodium benzoate is dissolved.
2. Add part (B) ingredients while stirring.
3. Add part (C) while stirring.

Tips, tricks and more information

This cold process formulation is super quick to make, reducing energy costs and production time.

Glycerine, also known as glycerol, has been used in Personal Care products for decades. It's a common ingredient in many Personal Care products, including lotions, creams, cleansers, and lip balms.

Discovery:

- In 1779, Swedish chemist Carl Wilhelm Scheele discovered glycerol by washing it out of a heated mixture of olive oil and lead oxide.
- The name "glycerine" was coined around 1811 by Michel Eugène Chevreul.
- The term "glycerol" was adopted in the 20th century.

Glycerine "heats" on the skin because it acts as a humectant, meaning it attracts moisture from the air and deeper layers of your skin to the surface, which can create a slight warming sensation as the moisture is drawn in and absorbed by your skin cells; this process is essentially the skin hydrating itself, leading to a feeling of warmth rather than actual heat generation. Glycerine bonds with the skin. Once it touches your skin, it begins to match your skin's temperature, creating a warming effect.

Properties

Appearance:	Clear yellow liquid
pH:	5.5 - 6.5
Viscosity:	200 cP Brookfield RVT, #3, 20°C, 50rpm
Stability:	12 weeks, 45°C, 20°C and 3F/T Cycle

Gen Y

Take a moment

Low impact formulations for when you're on the move or short on time

Generational Needs

Gen Y (1981 - 1996)

Generation Y is characterized by a strong preference for products that deliver multi-functional benefits. Their demands are shaped by digital savvy, budget awareness, and an emphasis on personalization. This generation regards hair care as equally important as skin care. Influenced by online reviews and social media trends, Gen Y prefer shopping online and values natural, ethical products made with organic and cruelty-free ingredients. With a keen focus on sustainability, they look for eco-friendly packaging and ingredient transparency.

Personalized products that cater to their unique beauty needs resonate well with this generation, and they appreciate innovative solutions that offer distinctive benefits. They connect with brands that reflect their values and prioritize social responsibility.

Often balancing busy professional and family lives with a passion for travel, convenience is paramount for Millennials. They prefer products that simplify their routines, incorporating personal care as part of a broader wellness lifestyle and seeking items that enhance their overall health and well-being.

By understanding and catering to the distinct needs of each generation, we are committed to providing innovative and effective personal care solutions for all.

Take a moment and experience Innospec's range of multi-functional products, from hair mousse to hand and body cleansers, designed for Gen Y's beauty care preferences.

Sarah Glynn
Applications Chemist, Personal Care EMEA

A note from the expert

The Brilliant Button Hand and Body Cleanser

The Brilliant Button has been designed for Millennials, who are constantly seeking novelty and unique experiences in the world of personal care products. For Gen Y, personal care is not just a necessity, but a moment of relaxation and well-being. Using products with innovative textures and formats can make the beauty routine more fun and engaging, transforming it into a fulfilling sensory experience.

These Hand & Body Cleansing drops are the result of a melt and pour base, coated in beads, to make it fun. The way we have used surfactants and wax, allowed the creation of a unique shape and texture, so fun to squish and use. It is ideal for travelling, as a single use dosage product for the generation 'on-the-go'.

Hero ingredients

EMPIGEN® BS/FA
(Cocoamidopropyl Betaine)

EMPIGEN® BSP
(Cocoamidopropyl Betaine)

Iselux® SCMI
(Sodium Cocoyl Methyl Isethionate)

Luxuriact® PLUS
(Sodium Methyl Cocoyl Taurate)

NANSA® LSS 495/H
(Sodium C14-16 Olefin Sulfonate)

Pureact Gluco D
(Decyl Glucoside)

Pureact TR-L90
(Sodium Methyl Lauroyl Taurate)

Pureact I-78P
(Sodium Cocoyl Isethionate)

Motivation for the formulation

Whilst surfactants are commonly used for emulsification or cleansing, sugar-based surfactants can also be used in hair styling applications such as leave-on hair products like hair mousses.

Typically, hair styling foams have been in the form of aerosol mousses. Whilst considered a format for an older generation, sales have remained consistent.

Novel foam pump packaging means that surfactants alone without aerosol can be used in the development of styling foams, being more environmentally friendly.

Here at Innospec, we have developed The Curiously Curly Hair Mousse, a styling foam formulation using natural sugar-based surfactants from our portfolio for gentle curl retention. This formulation is >98% naturally derived according to ISO16128.

Hero ingredients

Initial dosing experiments showed that from Innospec's portfolio of sugar surfactants, **Pureact Gluco D** (Decyl Glucoside) gave low volume low frizz and good curl retention on wavy hair switches. A naturally derived, mild sulfate-free surfactant, this is ideal for a leave-on styling product.

Luxuriact® Plus (Sodium Methyl Cocoyl Taurate) and **EMPIGEN® BS/FA** (Cocoamidopropyl Betaine) have been added for a mild sulfate free combination of surfactants to give good, stable foam when pumped from the applicator.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Glycerin	Vegetable Glycerine (Naissance)	3.00
B	Sorbitol	Sorbitol	0.50
C	Decyl Glucoside	Pureact Gluco D (Innospec)	4.00
	Sodium Methyl Cocoyl Taurate	Luxuriact® Plus (Innospec)	3.00
	DL-Panthenol	DL Panthenol (Soap Kitchen)	0.10
	Cocamidopropyl Betaine	EMPIGEN® BS/FA (Innospec)	5.00
	Aqua (and) Camellia Sinensis (White Tea) Leaf Extract	White Tea Extract (Blue Sky Botanics)	0.20
D	Fragrance	Mars AF G32203 (Azur Fragrances)	0.40
E	Sodium Benzoate	Sodium Benzoate	0.50
F	Citric Acid	Citric Acid Solution (50% w/w)	q.s. to pH 4.7 - 5.2

Preparation procedure

1. Add water and glycerin to vessel and mix (A).
2. Add sorbitol with mixing (mix until fully dispersed) (B).
3. Sequentially add ingredients (C) and mix until clear and uniform.
4. Add fragrance and mix until fully emulsified (D).
5. Add preservatives in phase (E) and mix until fully uniform and clear.
6. Adjust to pH to pH 4.7 - 5.2 with 50% citric acid solution as required (F).

Properties

Appearance:	Pale yellow to clear liquid
pH:	4.7 - 5.2
Viscosity:	Water thin
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

A non-aerosol pump foamer is used for this packaging which is more sustainable than aerosol cans.

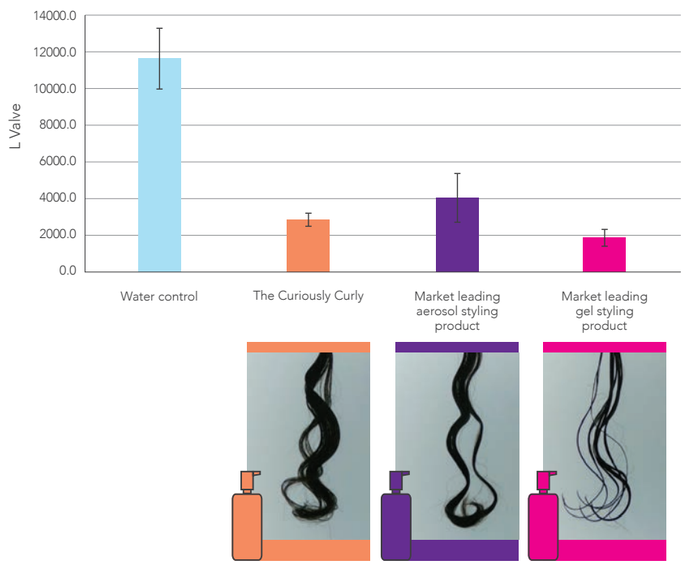
Hair mousse aerosols can negatively impact the environment by releasing volatile organic compounds (VOCs) into the atmosphere, contributing to air pollution, smog formation, and potentially climate change, even though modern formulas no longer contain ozone-depleting CFCs; improper disposal of the aerosol cans can also add to environmental concerns.

Key points about the environmental impact of hair mousse aerosols:

- VOC emissions: When sprayed, hair mousse aerosols release VOCs, which can react with sunlight to form ground-level ozone, a key component of smog.
- Climate change contribution: While not as significant as some other sources, the released VOCs can still contribute to greenhouse gas emissions and climate change.
- Air quality concerns: High levels of VOCs can irritate respiratory systems, particularly for individuals with asthma.
- Improper disposal: Aerosol cans, if not recycled properly, can end up in landfills and contribute to waste accumulation.

The Curiously Curly is an environmentally friendly alternative in a pump foamer.

Comparison of curl styling products: Hair volume after product application



To highlight the benefits of Pureact Gluco D (Decyl Glucoside) in The Curiously Curly we have conducted a series of standardised hair curl retention experiments using wavy switches compared to two market leading curl formulations. These include a gel format and a mousse format.

Image analysis shows that The Curiously Curly gives good curl retention, reduced frizz and low volume. The mousse and gel benchmarks gave less curl retention and a heavier look.

Image analysis was used to compare the volume of swatches treated with the styling products.

The comparison shows that the water control swatches were high in volume and remained high in volume.

Use of the The Curiously Curly created low volume swatches whilst not being weighed down.

Mousse Benchmark INCI: Aqua, Cocamidopropyl Betaine, Silicone Quaternium-16/Glycidoxy Dimethicone Crosspolymer, Polysorbate 20, Coco-Glucoside, VP/Methacrylamide/Vinyl Imidazole Copolymer, Undeceth-11, Undeceth-5, Polyquaternium-72, Parfum, Propylene Glycol, Disodium EDTA, Caprylhydroxamic Acid, Malic Acid, Benzyl Alcohol, Methylpropanediol, Acetic Acid, Rosa Canina Fruit Oil, Phenylpropanol, Propanediol, Caprylyl Glycol, Sodium Hydroxide, Tocopherol, Phenoxyethanol, Sodium Benzoate, Benzyl Salicylate, Hexyl Cinnamal, Linalool

Gel Benchmark INCI: Aqua, Xanthan Gum, Glycerin, Propylene Glycol, Phenoxyethanol, Acrylates/Palmeth-25 Acrylate Copolymer, Parfum, PEG-40 Hydrogenated Castor Oil, Polyquaternium-11, Aminomethyl Propanol, Ethylhexylglycerin, Benzophenone-4, Coumarin, Alpha-isonethyl Ionone, Linalool, Red 33 (CI 17200)

Motivation for the formulation

This is our fun factor to showcase how our surfactants can be used to develop textures.

Innospec has a range of surfactants suitable for textures from pastes to butters or sticks product development.

Formulations can be customized to achieve specific briefs. By adjusting levels of waxes, glycerin and surfactants it's possible to optimize:

- Firmness
- Texture
- Conditioning.

This formulation is based on sulfate-free surfactants Iselux® SCMI, Pureact TR-L90 and Pureact I-78P for a rich creamy foam with conditioning from argan oil and candelilla wax.

This is something a bit different – a soft, pasty core surrounded by a shell of tiny beads. The core provides cleansing and moisturization whilst the beads give exfoliation leaving skin soft and smooth.

Hero ingredients

This is a typical paste format at the core using **Iselux® SCMI** (Sodium Cocoyl Methyl Isethionate), **Pureact TR-L90** (Sodium Methyl Lauroyl Taurate) and **Pureact I-78P** (Sodium Cocoyl Isethionate).

Combined with Glycerin, an optimized paste format has been created for spreadability whilst the formulation is covered in jojoba beads for exfoliation.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Glycerin	Vegetable Glycerine (Naissance)	47.20
	Sodium Cocoyl Methyl Isethionate	Iselux® SCMI (Innospec)	1.50
	Sodium Methyl Lauroyl Taurate	Pureact TR-L90 (Innospec)	4.00
	Maltodextrin	Maltodextrin	2.10
B	Argania Spinosa Kernel Oil	Argan Oil (Naissance)	3.50
	Euphorbia Cerifera Cera (Candelilla) Wax	Candelilla Wax (The Soap Kitchen)	4.50
	Sodium Cocoyl Isethionate	Pureact I-78P (Innospec)	25.00
C	Phenoxyethanol	Microcare® PE (Thor)	1.00
	Fragrance	Juicy Defense (Azur Fragrances)	1.00
D	Jojoba Esters	Florapearls® Jojoba STD Oasis Verde (Cargill)	q.s.

Preparation procedure

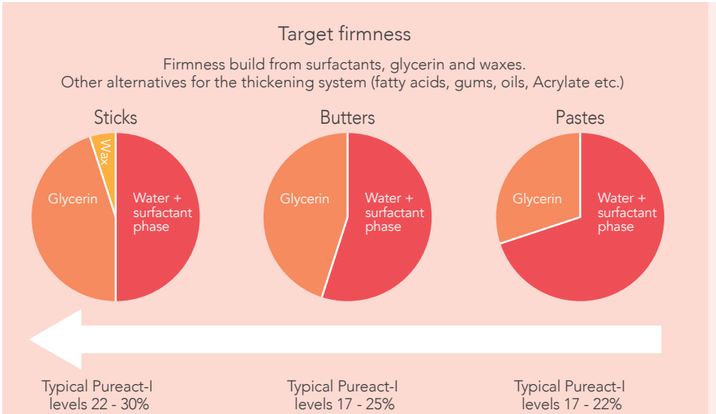
1. Add water to glycerin and mix to combine, then begin heating to 75 - 85°C.
2. In aliquots add in Iselux® SCMI, Pureact TR-L90 and maltodextrin and allow to dissolve fully.
3. Mix in argan oil and candelilla wax, allowing the wax to fully melt and incorporate into the batch.
4. In aliquots add in Pureact I-78P and disperse the powder into the batch before beginning cooling to 55 - 65°C.
5. Once the batch is below 65°C, add in phase C and mix until homogeneous.
6. Pour into moulds at 55 - 65°C and allow them to cool to room temperature to set.
7. Demould the solidified pastilles and coat them with phase D.

Properties

Appearance: Green bead covered solid cream-coloured pastilles

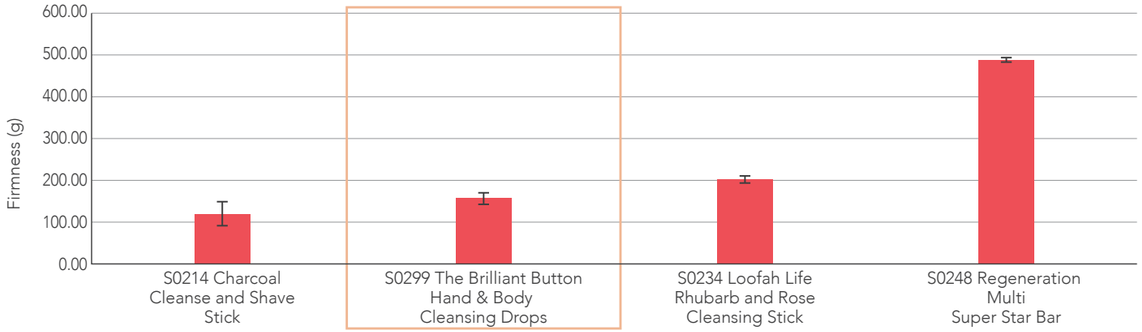
Stability: 12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information



We have used Argan oil but many oils can be used.

The beaded ball is a medium firmness, similar to a cleansing stick or butter.



Formulation	Glycerine (%w/w)	Candelilla Wax (%w/w)	Pureact-I (%w/w)	Firmness (g)
S0214 Charcoal Cleanse and Shave Stick	46.0	3.0	25.0	119.3
S0299 The Brilliant Button Hand & Body Cleansing Drops	47.2	4.5	25.0	156.1
S0234 Loofa Life Rhubarb and Rose Cleansing Stick	46.0	4.5	25.0	202.1
S0248 Regeneration Multi Super Star Bar	13.0	25.0 (Cetearyl Alcohol)	35.0 (Sodium Coco Sulfate)	488.3

Motivation for the formulation

In recent years there has been the emergence of interest in solid formats, driven by sustainability objectives on the reduced transport of water in a formulation, reduced packaging requirements, especially plastic, and a trend for dilute at home solutions.

Innospec is a specialist supplier of dried surfactants that can be used in dry formats offering a diverse portfolio to customers.

This formulation is a dry powder sachet intended to be diluted at home.

It includes NANSA® LSS495/H (Sodium C14-16 Olefin Sulfonate) combined with EMPIGEN® BSP (Cocoamidopropyl Betaine), both flowable, dry white powders that when diluted give good foam performance with optimum salt inclusion for viscosity modification.

The preservatives have been chosen for optimized preservation following dilution.

Hero ingredients

NANSA® LSS 495/H (Sodium C14-16 Olefin Sulfonate) is an anionic dry powder surfactant that is ideal in this format to produce cost effective foam.

EMPIGEN® BSP (Cocoamidopropyl Betaine) is combined as a co-surfactant to give stable foam.
As a free flowing amphoteric powder, it also helps to thicken the diluted powder formulation.

Both of these surfactants are free flowing powders which remain so when combined. This gives an easily dissolvable powder that forms a viscous formulation on dilution.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Sodium Benzoate	Sodium Benzoate	1.00
	Potassium Sorbate	Potassium Sorbate	0.50
	Citric Acid	Citric Acid	1.00
	Sodium Citrate	Sodium Citrate Tribasic	0.30
	Sodium Chloride	Sodium Chloride	7.00
B	Sodium C14-16 Olefin Sulfonate	NANSA® LSS 495/H (Innospec)	34.00
	Cocamidopropyl Betaine	EMPIGEN® BSP (Innospec)	30.00
	Sorbitol	Sorbitol	24.20
	Fragrance	Rhubarb and Roses AFH33854 (Azur Fragrances)	1.00

Preparation procedure

1. Slowly combine ingredients in phase A in powder blender and mix until uniform.
2. Sequentially add ingredients in phase B to phase A and mix until uniform.
3. Fill 20g into PVOH pouches and heat seal.

Properties

Appearance:	Free flowing white powder in sachet
pH:	4.8 - 5.2 (1:5 powder:water dilution)
Viscosity:	3000 - 5000 cP Brookfield RV, #4, 20°C, 20rpm (1:5 powder: water dilution)
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

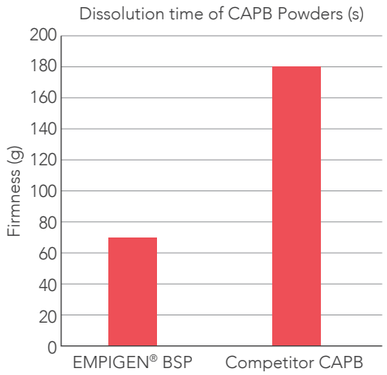
Tips, tricks and more information

To prevent the formation of lumps in the formulation, Sorbitol is included along with the powdered surfactants to control the rate of dissolution.

The PVOH water soluble sachets supress the salt curve, so we've adjusted the level of EMPIGEN® BSP to counteract that.

EMPIGEN® BSP is a fast dissolution CAPB powder.

This refill at home should be diluted 1:5 with warm tap water by adding 20g of the powder concentrate in the sachet to a refill bottle and 100g water. The bottle is shaken to dissolve the concentrate for 30 seconds to 1 minute.



Calculate carbon footprint eduction

The major attraction of powder formats is the lack of transporting water which reduces the carbon footprint to the consumer between using a powder formulation and a liquid formulation.

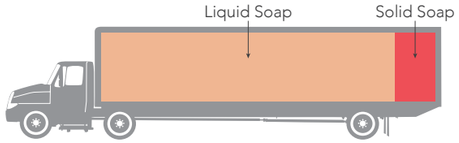
20g of powder formulation makes 120g of liquid product in the home.

20 = 1/6 of 120, transporting 20g would have 1/6 of the emissions as transporting 120g.

Calculations based on emission factors from DEFRA for transport emissions.

Turn these values into kg CO_2e is the emission factor for road transport of goods.

HGVs (all diesel) – Average laden (incl. WTT (well-to-tank) = 0.12111 kg CO_2e/tonne.km (note: this value changes slightly each year).



Gen Z

Care without compromise

Ingredients and formulations
that put the planet first

The Serene Shower
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The Stylish C'est la vie
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Generational Needs

Gen Z (Late 1990s - Early 2010s)

Generation Z is reshaping the personal care landscape with a unique perspective rooted in their values. Growing up in a digital age, they are acutely aware of environmental and social issues and seek products that resonate with their identities and principles.

This generation demands inclusivity in the beauty industry, celebrating all hair types – from super straight to coily curls—while addressing the diverse skin types and specific needs of different ethnicities. Technology is ingrained in their lives, making brands that offer virtual try-on apps, AI-driven personalized routines, and augmented reality interactions particularly appealing.

Gen Z is also highly conscious of the environmental and social impact of their consumption. They look to brands that actively work to minimize their ecological footprint and uphold ethical values. This includes preferences for packaging made from recycled or compostable materials, refillable options to reduce waste, and a commitment to using natural, organic, and cruelty-free ingredients. For this environmentally aware generation, these details matter significantly as they prioritize brands that care for the planet as much as they care for themselves.

By understanding and catering to the distinct needs of each generation, we are committed to providing innovative and effective personal care solutions for all.

Care without compromise with Innospec's range of naturally derived shower cream and hydrating cleansers, tailored to a Gen Z beauty care needs.

Amelie Nasso

Applications Chemist,
Personal Care EMEA

A note from the expert

The Serene Shower 99% Naturally Derived Shower Ceam

The Serene Shower is the perfect solution to make the Gen Z shower routine more enjoyable and kinder to the skin and the planet.

Using 100% naturally derived and COSMOS approved surfactants, this concept meets the needs of a generation that opts for natural alternatives, considered safer and gentler for the skin, reflecting a growing concern for personal well-being.

Furthermore, Gen Z is deeply sensitive to environmental issues and seeks to minimize their ecological footprint. Natural products are perceived as more sustainable and environmentally friendly, aligning with their values of environmental responsibility and commitment to a more sustainable future.

The formulation produces a dense creamy foam, with a lovely and soft feeling on the skin.

Hero ingredients

ACTIVSOFT S
(Cyamopsis Tetragonoloba (Guar) Gum)

EMPIGEN® CBET
(Coco-Betaine)

EMPILAN® EGDS/A
(Glycol Distearate)

LAUREX® CS
(Cetearyl Alcohol)

Pureact Gluco C
(Coco-Glucoside)

Pureact Gluco D
(Decyl Glucoside)

Pureact GLT
(Sodium Lauroyl Glutamate)

Pureact WS CONC
(Sodium Methyl Cocoyl Taurate)

Pureact I-85P
(Sodium Cocoyl Isethionate)

Motivation for the formulation

This 99% naturally derived shower cream is gentle, creamy and provides a light foam.

More and more consumers, especially Generation Z, are looking for natural solutions to gently cleanse, whilst helping in sustainability.

This formulation contains high-quality natural ingredients such as Sodium Lauroyl Glutamate and natural Alkyl Polyglucoside sugar surfactants for cleansing, making it a friendly choice for both your skin and the environment.

With pure essential lemon oils for freshness, plant based sunflower oil to replace mineral oils, and vegetable glycerin, skin will feel nourished and moisturised. A cold process formulation requiring less energy further supports the sustainability aspect of this formulation.

Hero ingredients

Pureact Gluco C (Coco-Glucoside) and **Pureact Gluco D** (Decyl Glucoside) are non-ionic surfactants derived from natural and renewable raw materials. They perform well as primary surfactants and can also be used as co-surfactants to reduce irritation, improve foam quality and provide effective cleansing.

Pureact GLT (Sodium Lauroyl Glutamate) is a naturally derived anionic surfactant produced from L-glutamic acid, a naturally occurring amino acid, and lauric acid. It is a mild surfactant that is non-irritating and readily biodegradable. It produces moderate to good foam, offers a silky, soft after-feel and is effective at improving the skin mildness in surfactant formulas.

ACTIVSOFT S (Cyamopsis Tetragonoloba (Guar) Gum) is a naturally derived polymer from the guar bean plant. It is a non-derivatized polymer developed from the ground endosperm of Cyamopsis Tetragonoloba contributing to viscosity build, foam boosting and stabilisation in formulations.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Sodium Hydroxide	Sodium Hydroxide Solution (1%w/w)	q.s. to pH 7.0 - 8.0
B	Hectorite	Bentone Hydroclay™ 2000 (Elementis)	1.00
C	Coco-Glucoside	Pureact Gluco C (Innospec)	8.00
	Decyl Glucoside	Pureact Gluco D (Innospec)	10.00
	Sodium Lauroyl Glutamate	Pureact GLT (Innospec)	5.00
D	Glycerin	Vegetable Glycerine (Naissance)	8.00
	Helianthus Annuus (Sunflower) Seed Oil	Sunflower Oil (Naissance)	20.00
E	Glycerin	Vegetable Glycerine (Naissance	4.00
	Cyamopsis Tetragonoloba (Guar) Gum	ACTIVSOFT S (Innospec)	0.30
	Xanthan Gum	Vanzan® NF-C (Vanderbilt Minerals)	0.60
F	Benzyl Alcohol	Microcare® BNA (Thor)	0.40
	Chlorphenesin	Microcare® CPH(P) (Thor)	0.30
	Citrus Limon (Lemon) Peel Oil	Lemon Essential Oil (Soap Kitchen)	0.75
G	Citric Acid	Citric Acid Solution (50% w/w)	q.s to pH 6.0 - 6.3

Preparation procedure

1. Adjust pH of deionized water to pH 7.0 - 8.0 with 1% sodium hydroxide solution.
2. Slowly add Bentone Hydroclay™ 2000 with rapid stirring (800rpm) and mix for 30 minutes until fully hydrated.
3. Sequentially add surfactants in phase (C) and mix until uniform.
4. Slowly add glycerine and sunflower oil with moderate mixing, mix until uniform.
5. In separate phase combine Guar gum and Xanthan gum with remaining glycerine to form slurry (E).
6. Add slurry (E) slowly to the main batch and mix for 20 minutes to fully disperse and hydrate the rheology modifiers.
7. Add the preservatives and essential oils in phase F and mix until uniform.
8. Adjust pH with Citric Acid Solution (50% w/w) to 6.0 - 6.3 as needed.

Properties

Appearance:	White to cream viscous lotion
pH:	6.0 - 6.3
Viscosity:	6,500 - 7,500 cP Brookfield RV, #4, 20°C, 20rpm
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycles

Tips, tricks and more information

The combination of oil, clay and gum thickeners with an optimized combination of 100% naturally derived surfactants gives a dreamy feel on the skin.

When formulating Bentone Hydroclay 2000 which is used in this formulation remember to hydrate it for at least 30 minutes. For ease of handling the ACTIVSOFT S and Xanthan Gum should not be added to an aqueous phase but can be added separately with the glycerin to form a slurry. Alternatively, it is also common practice to add gums in fragrance phases.

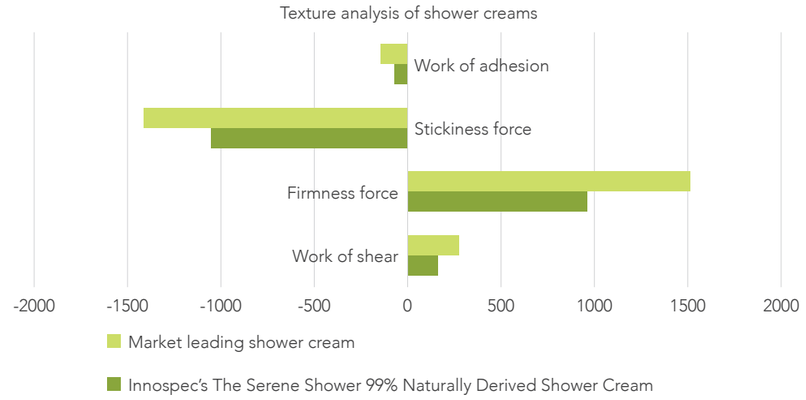
Pureact Gluco C and Pureact Gluco D are also available to purchase as RSPO Mass Balance grades and as a 100% coconut sourced material.

Market leading shower cream

The Serene Shower
99% Naturally Derived Shower Cream

We have conducted texture analysis of Innospec's Serene Shower against a market leading shower cream.

The Innospec Serene Shower 99% Naturally Derived Shower Cream is less adhesive, has a lower force of withdrawl indicating that it is less sticky, has less firmness providing a lighter formulation and is lower in required force to spread the formulation making it easier to spread.



Benchmark INCI: Aqua, Helianthus Annuus Seed Oil, Glycerin, Decyl Glucoside, Coco-Glucoside, Alcohol, Persea Gratissima Oil, Pyrus Cydonia Seed Extract, Sodium Cocoyl Glutamate, Disodium Cocoyl Glutamate, Parfum, Limonene, Citral, Geraniol, Linalool, Citronellol, Farnesol, Xanthan Gum, Citric Acid, Hectorite

Motivation for the formulation

Cream facial cleansers are appealing because they are formulated with hydrating ingredients like ceramides and hyaluronic acid, which effectively cleanse the skin without stripping away its natural barrier, making it a great choice for people with dry or sensitive skin, especially due to their gentle, non-irritating nature and dermatologist-recommended formula.

This is also appealing to Gen Z who have certain cult products and love shopping for 'dupes'.

The Stylish C'est la vie is an optimized blends of mild sulfate-free surfactants combined with vegetable glycerin, Cholesterol and salicylic acid to mimic skin's natural chemistry.

Hero ingredients

In this facial cleanser we have combined **Pureact WS Conc** (Sodium Methyl Cocoyl Taurate), **Pureact I-85P** (Sodium Cocoyl Isethionate) and **EMPIGEN® CBET** (Coco-Betaine) to produce a mild sulfate-free formula suitable for the young skin of Gen Z. The optimized surfactant content will give a creamy, generous and luxurious foam with gentle cleansing.

LAUREX® CS (Cetearyl Alcohol) has been added as a versatile wax that can be used to modify viscosity and consistency in formulations whilst imparting a premium skin feel.

EMPILAN® EGDS/A (Glycol Distearate) is used as a pearliser, opacifier and viscosity builder to give a lotion-like texture to this formulation.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Glycerin	Vegetable Glycerine (Naissance)	4.00
	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	Carbopol® Ultrez 20 (Lubrizol)	0.20
B	Glycerin	Vegetable Glycerine (Naissance)	2.00
	Xanthan Gum	Xanthan Gum FNCS-PC (Surfachem)	0.20
C	Steareth-21	Surfacare® B721 (Surfachem)	2.00
	Steareth-2	Surfacare® B72 (Surfachem)	1.00
	Glyceryl Stearate	Cithrol™ GMS 30 (Croda)	0.60
	Cholesterol	Cholesterol (Sigma Aldrich)	0.40
	Cetearyl Alcohol	LAUREX® CS (Innospec)	0.40
D	Sodium Hydroxide	Sodium Hydroxide Solution (10% w/w)	q.s. to pH 5.5
E	Sodium Methyl Cocoyl Taurate	Pureact WS Conc (Innospec)	15.00
	Coco-Betaine	EMPIGEN® CBET (Innospec)	12.00
	Sodium Cocoyl Isethionate	Pureact I-85P (Innospec)	3.00
	Decyl Glucoside (and) Sodium Lauroyl Lactylate	Pureact 138 (Innospec)	2.00
	Glycol Distearate	EMPILAN® EGDS/A (Innospec)	0.70
	Glyceryl Oleate	Glyceryl Oleate	0.40
F	Phenoxyethanol	Microcare® PE (Thor)	0.50
	Chlorphenesin	Microcare® CPH(P) (Thor)	0.30
	Sodium Benzoate	Sodium Benzoate	0.50
	Salicylic Acid	Salicylic Acid	0.20
G	Citric Acid	Citric Acid Solution (50% w/w)	q.s. to pH 5.5

Preparation procedure

1. Slowly add Carbopol Ultrez 20 onto deionized water without stirring. Allow carbomer to self-wet and sink to the bottom of vessel before gently stirring with propellor mixer to disperse (A).
2. Begin heating phase A to 75 - 80°C.
3. Combine xanthan gum and glycerine to form slurry and then add slurry (B) to phase (A), mix until gum fully hydrated.
4. In separate vessel combine ingredients in phase C and mix at 80°C.
5. Slowly add phase C to phase A/B and then homogenize on Silverson Homogenizer for 2 mins at 5000rpm.
6. Return back to propellor stirring and begin cooling.
7. Adjust pH to ~ 5.0 - 5.5 with 10% NaOH solution (D).
8. Slowly add surfactants in phase (E) and mix until uniform.
9. When formulation is at 40°C slowly add preservatives in phase (F).
10. Adjust pH to pH 5.5 with 50% citric acid solution as required (G).

Properties

Appearance:	White opaque viscous liquid/lotion
pH:	5.4 - 5.6
Viscosity:	9,000 - 10,500 cP Brookfield RV, #4, 20°C, 20rpm
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

In the preparation of this formula initially the emulsion of oils is created and then the external phase enriched with a combination of sulfate-free surfactants to create a foaming cream formulation.

Gums can be introduced in a glycerin slurry prior to hydration.

Innospec Stylish C'est la vie Facial Cleanser

A similar dense, small bubble size with the Innospec facial cleanser appearing creamier.

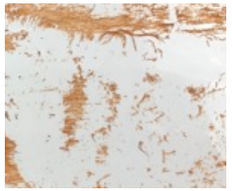
Market leading cream facial cleanser

We conducted a cleansing experiment to determine the cleansing and emulsification of 24 hour foundation make-up from a white tile. We looked at Innospec's Stylish C'est la vie Facial Cleanser compared to a market leading cream facial cleanser.

It can be seen that the Innospec Stylish C'est la vie gave a whiter after appearance, cleaning better than the benchmark.

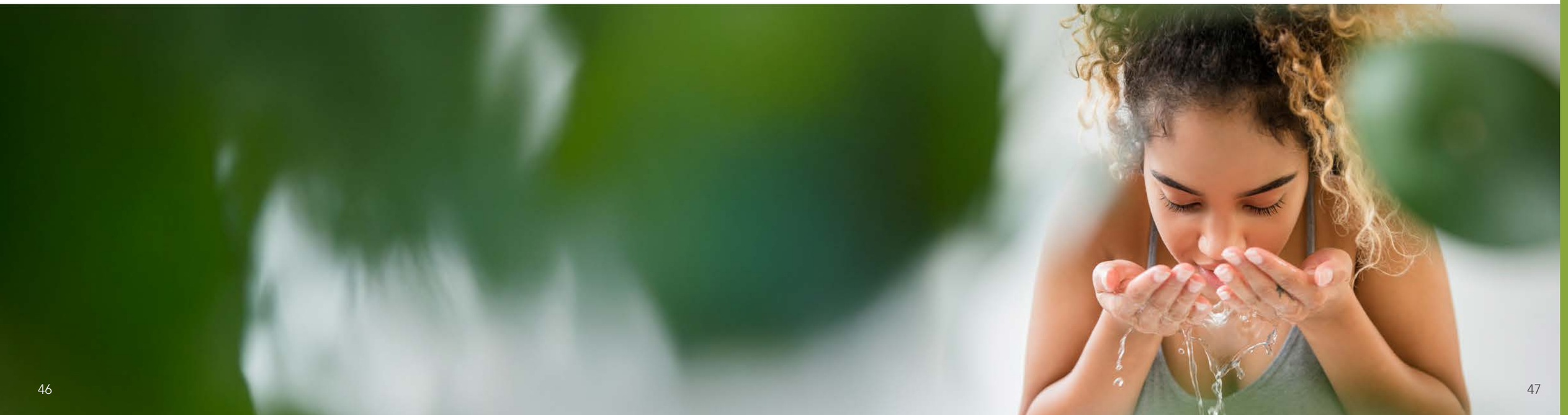
Foundation make-up applied to a white tile

Market leading cream facial cleanser



Innospec Stylish C'est la vie Facial Cleanser

Benchmark INCI: Aqua, Glycerin, Sodium Methyl Cocoyl Taurate, Coco-betaine, Sodium Cocoyl Isethionate, Sodium Chloride, PCA, PPG-5-Ceteth-20, PEG-100 Stearate, PEG-150 Pentaerythrityl Tetrastearate, PEG-6 Caprylic/Capric Glycerides, PEG-30 Dipolyhydroxystearate, CI77891/Titanium Dioxide, Aspartic Acid, Ceramide NP, Ceramide AP, Ceramide EOP, Sorbitan Isostearate, Carbomer, Glycol Distearate, Glyceryl Stearate, Glyceryl Oleate, Glycine, Trideceth-6, Cetearyl Alcohol, Behentrimonium Methosulfate, Threonine, Sodium Hydroxide, Salicylic Acid, Sodium PCA, Sodium Lactate, Arginine, Sodium Lauroyl Lactylate, Serine, Sodium Benzoate, Valine, Sodium Hyaluronate, Proline, Isoleucine, Cholesterol, Phenoxyethanol, Alanine, Phenylalanine, Coconut Acid, Coco-glucoside, Chlorphenesin, Disodium EDTA, Hydroxyethyl Urea, Citric Acid, Hydroxyethyl Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Caprylyl Glycol, Phytosphingosine, Xanthan Gum, Histidine, Acrylates/C10-30 Alkyl Acrylate Crosspolymer, Polyquaternium-53, Polyquaternium-39, Polysorbate 60, Ethyhexylglycerin, Benzoic Acid



Gen A

Kindness is strength

Giving you the power of gentle cleansing

The Enchanting Crystal
Page 50

The Precious Pup
Page 54

Generational Needs

Gen A (2010 - 2025)

Generation Alpha is beginning to make a notable impact on the personal care market, becoming savvy consumers of beauty products ranging from serums and toners to moisturizers and sunscreens. Growing up with technology, they embrace interactive experiences and prefer personal care products that are enjoyable to use. They often look to their Millennial parents and Gen Z siblings for inspiration and access to the latest trends.

This generation has constant access to information through the internet and social media, enabling them to discover new brands and products easily. They seek natural, clean ingredients that are effective while being mindful of what they apply to their hair and skin. Environmental consciousness runs deep; they favor brands committed to sustainability and eco-friendly practices.

Generation Alpha is the most diverse generation yet, expecting brands to provide inclusive representation across all skin tones, body types, and genders. Additionally, the rise of the 'pet parents' trend signifies a growing interest among this generation in high-quality, natural, and organic products for their pets, as they prioritize the health and well-being of their furry companions.

By understanding and catering to the distinct needs of each generation, we are committed to providing innovative and effective personal care solutions for all.

Kindness is strength with Innospec's mild cleansers and gentle pet shampoos, specially formulated for Generation Alpha's beauty care needs.

Susan Pye
Senior Applications Chemist, Personal Care EMEA

A note from the expert

The Precious Pup Label Free Pet Shampoo

We designed this Label Free Pet Shampoo for Gen A, to create an extremely mild formulation for pets, who are truly considered full-fledged family members. This young generation is looking for pet shampoos that are easy to apply, that rinse off easily and that simplify the dog's grooming routine while making the experience enjoyable for both the pet and the owner!

The Precious Pup combines natural/renewable sourced ingredients with surfactants that generate large amounts of foam quickly with little agitation, but also easy to rinse reducing cleansing times.

Hero ingredients

CONDICARE PQ10-4
(Polyquaternium-10)

EMPIGEN® BS/H50
(Cocoamidopropyl Betaine)

Iselux® LQ-CLR-SB
(Sodium Lauroyl Methyl Isethionate)

Pureact GLT
(Sodium Lauroyl Glutamate)

Motivation for the formulation

People often prefer solid bar soaps because they are considered more environmentally friendly due to minimal packaging, can be more cost-effective and provide a satisfying tactile experience when lathering. They can sometimes be formulated with richer, more natural ingredients compared to liquid soaps, which often contain a lot of water; additionally, some people find the feeling of physically scrubbing with a bar to be more cleansing than using a liquid wash.

Key reasons people choose solid bar soaps:

- Less waste: No plastic bottles, allowing you to use the entire bar without waste.
- Potential for natural ingredients: Solid soaps can incorporate more concentrated natural oils and butters without separating like in liquid form.
- Cost-effective: Generally cheaper than liquid soap as they require less packaging.
- Tactile experience: Some people enjoy the feeling of physically rubbing the bar on their skin to create a lather.
- Minimalist: Simple, solid bar design can be aesthetically pleasing.

We wanted to make an eye-catching clear bar to impart aesthetics of clarity and naturality.

This is a combination of sulfate-free surfactant, Pureact GLT, to be milder to skin. This will be fun for kids to use.

Hero ingredients

Pureact GLT (Sodium Lauroyl Glutamate) is a naturally derived anionic surfactant produced from L-glutamic acid, a naturally occurring amino acid, and lauric acid. It is COSMOS approved. It is a mild surfactant that is non-irritating and readily biodegradable, producing moderate to good foam, offering a silky, soft after-feel and is effective at improving the skin mildness in surfactant formulas. **Pureact GLT-MB** is available to purchase as an RSPO Mass Balance certified material.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		8.61
	Glycerin	Vegetable Glycerine (Naissance)	23.30
	Mono Propylene Glycol	Mono Propylene Glycol USP	11.00
	Tetrasodium Glutamate Diacetate	Dissolvine® GL-38 (Nouryon)	0.20
	Sodium Chloride	Sodium Chloride	1.50
B	Cocos Nucifera (Coconut) Oil	Coconut Oil White Standard (The Soap Kitchen)	9.00
	Stearic Acid	Stearic Acid (Naturally Balmy)	9.00
C	Sodium Hydroxide	Sodium Hydroxide Solution (32% w/w)	9.39
D	Sodium Lauroyl Glutamate	Pureact GLT (Innospec)	10.00
E	Sorbitol	Sorbitol	16.50
F	Citric Acid	Citric Acid Solution (50% w/w)	0.50
G	Fragrance	Fragrance Orange Blossom (Sozio)	1.00
H	Aqua		q.s. to 100

Preparation procedure

1. Slowly combine ingredients in phase A and mix until clear and uniform, then begin heating to 80°C.
2. When phase A is at 80°C slowly add with stirring coconut oil and stearic acid in small aliquots to maintain temperature above 70°C and avoid generating bubbles in soap (B).
3. When all the coconut oil and stearic acid has melted to form a clear solution slowly add sodium hydroxide dropwise to avoid generating large clumps of soap, which can take a long time to redissolve (C).
4. Once all the sodium hydroxide has been added stir until the soap becomes a clear non-viscous liquid, when clear slowly add Pureact GLT maintaining temperature above 70°C (D).
5. Slowly add sorbitol in aliquots to avoid generating air bubbles in the soap and mix until clear and uniform at 80°C (E).
6. Add citric acid solution and mix until uniform (F).
7. Add fragrance and mix until clear and emulsified (G).
8. Add water to compensate for any lost through evaporation (H).
9. Carefully pour soap into mold at 70-80°C, avoiding generating air bubbles. Spray with low levels of ethanol to remove any air bubbles on the surface of the soap.

Properties

Appearance: Clear yellow solid bar

pH: 9.0 - 9.5

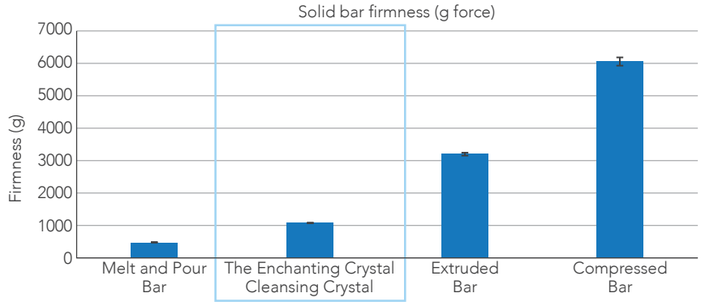
Stability: 12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

As this is a hot pour bar any shape can be made using different moulds. Carefully pour soap into mould at 70 - 80°C, avoiding generating air bubbles. Spray with low levels of ethanol to remove any air bubbles of the surface of the soap.

Here we have used coconut oil but you can use a range of other oils as desired.

The key to getting a clear bar is refractive index matching.



We have measured the firmness of The Enchanting Crystal to show how it compares to other bar formats.

It can be noted that it is a solid format with low firmness typical of a melt and pour bar.

Motivation for the formulation

The growing interest within the cosmetic industry to produce grooming products for pets has raised questions as to whether these types of products are regulated as cosmetics. Article 2 of the UK Cosmetics Regulation and EU Cosmetic Products Regulation defines a cosmetic product as: *"...any substance or mixture intended to be placed in contact with the external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition or correcting body odours."*

As pet products are not intended to be used on the human body, they are not classified as cosmetics and therefore are not subject to the legislation.

If the purpose of the product is just to clean the pet such as straightforward shampoos, then they will likely be classed as a 'general product' and should comply with CLP labelling.

At Innospec, animal safety and well-being is important to us. For that reason, we have created a pet shampoo following CLP guidance that is label-free.

This formulation uses gentle, mild sulfate-free surfactants, at the correct pH for your pet's skin incorporating our latest fast-rinse surfactants for convenience and ease.

Hero ingredients

Iselux® LQ-CLR-SB (Sodium Lauroyl Methyl Isethionate) is an extremely mild surfactant derived from natural/renewable resources that is used in formulations as a primary or secondary surfactant.

As a primary surfactant in combination with amphoteric surfactant **EMPIGEN® BS/H50** (Cocoamidopropyl Betaine) viscosity is built-in formulations. This combination produces a dense, luxurious foam and elegant after-feel. It provides gentle yet thorough cleansing with outstanding rinsability. The excellent water solubility properties allow the formulator to produce crystal clear cleansing systems that are hydrolytically stable over a broad pH range.

To impart conditioning to fur we have added **CONDICARE PQ10-4** (Polyquaternium-10), a cationic conditioning agent. It is mild and compatible with anionic, non-ionic, cationic and amphoteric systems. **CONDICARE PQ10-4** is also completely soluble in water, which allows it to be used in clear systems.

Ingredients

INCI	Ingredients	Trade Name (Supplier)	% w/w
A	Aqua		q.s. to 100
	Polyquaternium-10	CONDICARE PQ10-4 (Innospec)	0.50
B	Sodium Lauroyl Methyl Isethionate	Iselux® LQ-CLR-SB (Innospec)	10.00
	Cocamiodopropyl Betaine	EMPIGEN® BS/H50 (Innospec)	7.00
C	Fragrance	Algoe AFL37721 (Azur Fragrances)	0.50
D	Phenoxyethanol (and) Chlorphenesin (and) Aqua (and) Glycerin	Microcare® PHC (Thor)	1.00
E	Sodium Hydroxide	Sodium Hydroxide Solution (10% w/w)	q.s to pH 7.0 - 7.5
F	PEG-150 Pentaerythrityl Tetrastearate (and) PPG-2 Hydroxyethyl Cocamide (and) Water	Versathix™ (Croda)	q.s 1.80-2.00 to 5000 - 7000 cP

Preparation procedure

1. Slowly add CONDICARE PQ10-4 to deionized water with stirring, mix until fully uniform and clear (A).
2. Sequentially add ingredients in phase B to phase A and mix until clear and uniform.
3. Slowly add fragrance and mix until clear and fully emulsified (C).
4. Add preservatives (D) and mix until clear and uniform.
5. Adjust formulation to final pH with 10% w/w sodium hydroxide solution as required (E).
6. Add phase A to reach final viscosity and mix until fully thickened and clear (F).

Properties

Appearance:	Clear, pale yellow, viscous liquid
pH:	7.0 - 7.5
Viscosity:	5,000 - 7,000 cP Brookfield RV, #4, 20°C, 20rpm
Stability:	12 weeks, 45°C, 20°C, 5°C, and 3F/T Cycle

Tips, tricks and more information

This easy to produce cold process dog shampoo, leaves your pet clean and fresh.

The surfactants have been chosen to generate large amounts of foam quickly with little agitation, but also to be easy to rinse, reducing cleansing times.

The formulation contains added conditioning agents to make you pets fur easier to comb once dry.

The pH of a pet's skin is generally considered to be slightly alkaline, ranging from around 6.2 to 7.4, depending on site and breed. This is more neutral compared to the acidic pH of human skin (around 5.5). This formulation has been made at pH 7.0 - 7.5. Take care in choosing an effective preservative for this pH range.

Due to the low level of surfactants used for this label-free formulation with application performance, salt thickening is not possible. Here we have used an acceptable rheology modifier to achieve our desired formulation viscosity.

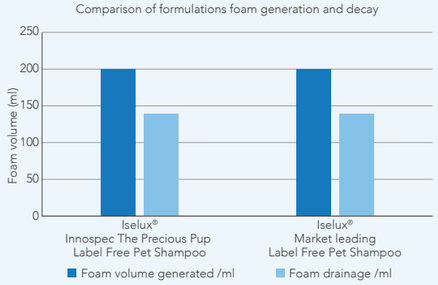
Fast rinse products are a growing initiative in both the Personal Care and Pet Care sectors. There are a number of factors behind the demand for fast rinse products in Pet Care, in particular:

Consumers: want fast rinse products for pet well-being, convenience and speed of wash, less product contact indicates mildness to pets, less water enables improved fragrance longevity.

Dog groomers: want fast rinse in washing for business efficiency, ease of washing, less matting.

We developed a label-free pet shampoo and compared its foam profile to that of a market leading label-free Iselux® shampoo.

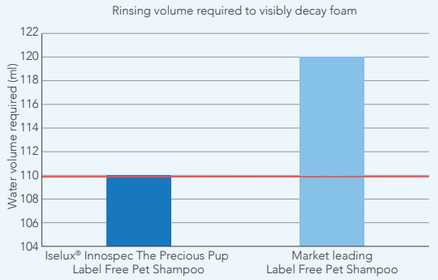
Using a foam technique, we compared amount of foam generation and amount of foam decay over a period.



We can see that The Precious Pup Shampoo has similar foam generation to the market leading Iselux® pet shampoo. This product has similar solids levels included to our product.

We also see a similar foam decay.

The foam decay for each product is comparable.



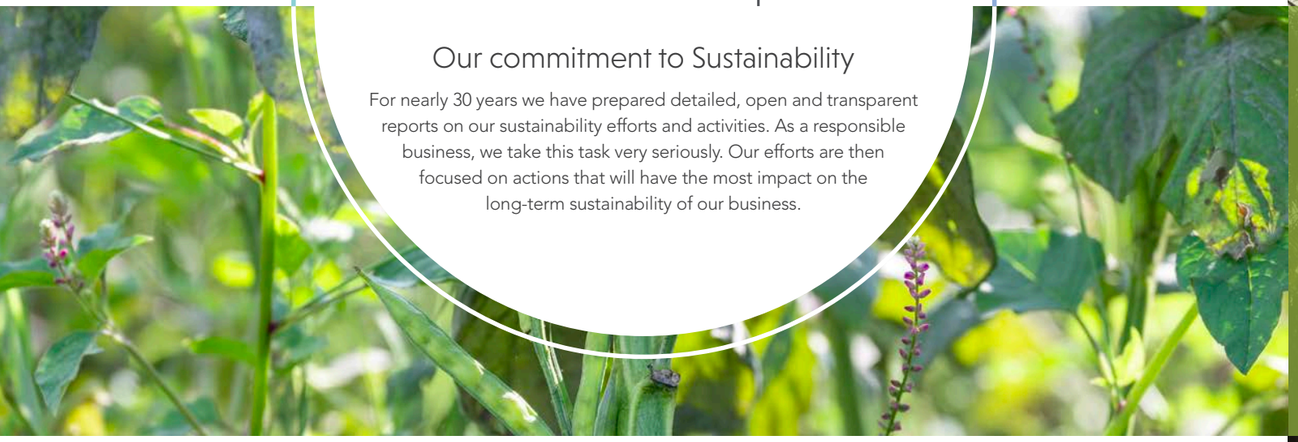
We also conducted an experiment to determine the amount of rinse water required to visibly rinse generated foam from a hair switch.

We can see that The Precious Pup Shampoo requires less water than the lower solids market leading product.

Less volume of water required in a flowing rinse water would indicate faster rinsing of this formulation.

Gen A

BE UNIQUE with innospec



Our commitment to Sustainability

For nearly 30 years we have prepared detailed, open and transparent reports on our sustainability efforts and activities. As a responsible business, we take this task very seriously. Our efforts are then focused on actions that will have the most impact on the long-term sustainability of our business.

Sustainable

Reducing our impact

Supplying safe, sustainable products, designed to meet the needs of society now and in the future, helping our customers achieve their sustainability goals while minimising environmental impact.

Responsible

Leading by example

Creating customer value and growth while caring for our people, upholding high ethical standards and actively working to reduce our impact on the environment.

Accountable

Transparent Reporting

Open disclosure and communication of our sustainability strategy, actions and performance across environmental, social and governance areas with all stakeholders.

One example of our approach to sustainability is our new partnership with the International Justice Mission (IJM) to combat modern slavery in the Indonesian palm industry.

By targeting the root causes of modern slavery and empowering key stakeholders, the collaboration will strengthen protection for palm oil workers and represents a significant step in the fight against forced labour.

Innospec has a long-term commitment to source palm-based raw materials responsibly. We have been a member of the Roundtable on Sustainable Palm Oil (RSPO) since 2013 and all our facilities that handle palm products carry RSPO Supply Chain certification. Aligning to IJM's mission will help Innospec's Performance Chemicals business to enhance this commitment, and ensure our products comply with the company's NDPE policy.

To find out more about our partnership progress:
https://innospecsustainability.com/social/key-social-partnerships/fighting-modern-slavery-in-the-palm-oil-industry/

Innospec has a proven track record in personal care. Our ingredients are used in many of the most popular-selling brands on sale in the world today. We are ready to support your next formulation project, so let's talk.

For inspiration, ideas or further information, please contact us:

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We hold and EcoVadis Gold Rating for our sustainability management system and performance. Achieving Gold puts Innospec in the top 5% of all companies listed in our sector globally.

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