SAMPLE REPORT

Target Markets: EU · India | Variants: 3 included (A / B / C)
Date: April 2026

Formula — Variant A

INCI Name	Ph.	Conc. (%)	Function	Safety	Conf.
Aqua	A	q.s.	Solvent	—	—
Glycerin	A	5.00	Humectant	0.0	HIGH
Niacinamide	A	3.00	Brightening active	0.2	HIGH
Disodium Laurylglucosides Hydroxypropyl Citrate	A	15.00	Primary surfactant	0.4	MED
Coco-Glucoside	A	5.00	Co-surfactant	0.8	MED
Cocamidopropyl Betaine	A	4.00	Amphoteric co-surfactant	1.9	MED
Xanthan Gum	B	0.30	Viscosity modifier	0.0	HIGH
Centella Asiatica Extract	B	1.00	Soothing active	0.3	MED
Phenoxyethanol (and) Ethylhexylglycerin	C	0.90	Preservative system	2.5	MED
Citric Acid	C	q.s.	pH adjuster	0.5	HIGH

Processing Notes

Phase A — 45°C: Combine water and glycerin in main vessel. Heat to 45°C. Dissolve niacinamide completely before adding surfactants. Add Disodium Laurylglucosides Hydroxypropyl Citrate first — stir gently until uniform. Follow with Coco-Glucoside and Cocamidopropyl Betaine. Avoid high-shear mixing to prevent excessive foam.

Phase B — 40°C: Pre-hydrate Xanthan Gum in a small portion of glycerin (1:3 ratio) for 10 minutes before dispersing into Phase A — this prevents fisheyes. Add Centella Asiatica Extract and stir until homogeneous.

Phase C — below 40°C: Cool batch to below 40°C. Add Phenoxyethanol (and) Ethylhexylglycerin preservative system. Adjust pH to 5.0–5.5 with citric acid solution (50%). Measure pH at 25°C, not while warm.

Final: Mix gently for 5 minutes. Final viscosity is pH-dependent — lower pH increases viscosity in this system. Target 2,000–4,000 cP. Do not exceed 50°C at any stage — niacinamide degrades above 80°C but prolonged heat above 50°C affects clarity.

Safety Overview

Per-ingredient safety scores from ECHA CLP, CIR, and PubMed sources. Only medium and high confidence scores are shown. Low confidence ingredients display "No hazard data available."

INCI Name	Score	Band	Conf.	Notes
Glycerin	0.0	GREEN	HIGH	No hazard signals. Widely used humectant.
Niacinamide	0.2	GREEN	HIGH	CIR: safe as used. No sensitization, no irritation at ≤5%.
Disodium Laurylglucosides Hydroxypropyl Citrate	0.4	GREEN	MED	Novel APG citrate ester. No CLP classifications. Limited long-term data — confidence medium.
Coco-Glucoside	0.8	GREEN	MED	APG surfactant. Low irritation potential. CIR: safe in rinse-off up to 12%.

INCI Name	Score	Band	Conf.	Notes
Cocamidopropyl Betaine	1.9	GREEN	MED	Sensitization axis: 1.9 (NACDG prevalence 1.7%). Known sensitizer in a minority — largely attributed to impurities (DMAPA). Irritation: low.
Phenoxyethanol (and) Ethylhexylglycerin	2.5	GREEN	MED	Sensitization: 5.0. Systemic toxicity: 3.0. EU max 1.0% — this formulation at 0.90% is compliant. Japan applies category-specific limits.
Xanthan Gum	0.0	GREEN	HIGH	No hazard signals. CIR: safe as used.
Centella Asiatica Extract	0.3	GREEN	MED	Low hazard profile. Rare sensitization reports in literature — not CLP classified.
Citric Acid	0.5	GREEN	HIGH	Irritation at high concentrations only. pH adjuster use levels (q.s.) pose no concern.

Regulatory Detail

INCI Name	EU	India
Aqua	Permitted	Permitted
Glycerin	Permitted	Permitted
Niacinamide	Permitted	Permitted
Disodium Laurylglucosides Hydroxypropyl Citrate	Permitted (REACH registered)	Not listed (novel ingredient)
Coco-Glucoside	Permitted	Permitted
Cocamidopropyl Betaine	Permitted	Permitted
Xanthan Gum	Permitted	Permitted
Centella Asiatica Extract	Permitted	Permitted
Phenoxyethanol	Restricted max 1.0% (Annex V/29)	Permitted max 1.0%
Ethylhexylglycerin	Permitted	Permitted
Citric Acid	Permitted	Permitted

Note: Disodium Laurylglucosides Hydroxypropyl Citrate is REACH-registered in EU but not yet listed in India's IS 4707 positive list. As a novel cosmetic ingredient in India, regulatory notification under Cosmetics Rules 2020 may apply. Consult regulatory affairs before India launch.

Market Intelligence

Co-occurrence patterns from 561,000+ commercially launched products relevant to this product type and target markets.

Ingredient Pair	Products	Insight
Niacinamide + Glycerin	18,421	Most common pairing in brightening face washes globally. Present in 73% of niacinamide-containing cleansers.
Niacinamide + Centella Asiatica Extract	4,218	Growing rapidly in APAC brightening category. +42% YoY in India market launches 2024–2025.
Cocamidopropyl Betaine + Coco-Glucoside	3,847	Standard mild surfactant pairing in sulfate-free cleansers. Well-established consumer acceptance.
Niacinamide + Phenoxyethanol	12,093	Common active-preservative pairing. No known compatibility issues at these use levels.
Centella + Phenoxyethanol	2,891	Frequently paired in Korean and Japanese sensitive-skin formulations.

Formulation Notes

1. **Surfactant system selection.** Disodium Laurylglucosides Hydroxypropyl Citrate was selected as primary surfactant based on mildness ranking from Zein Number data — it scores in the top percentile of our 1,170 surfactant database for skin compatibility. This is a functionalized APG citrate ester: 100% naturally derived, no ethoxylation, no PEGs. Paired with Coco-Glucoside (APG family, stable foam) and Cocamidopropyl Betaine (viscosity building, foam quality) to create a ternary system with excellent sensory properties.

2. **Niacinamide concentration.** Selected at 3% based on published clinical data showing significant improvement in skin brightness at 4–8 weeks. The 3% level balances efficacy with formulation stability — higher concentrations (5%+) can cause temporary flushing in sensitive skin and may reduce clarity in surfactant systems. Median concentration in APAC brightening cleansers: 2.5% (IQR 1.5–4.0%).

3. **pH strategy.** Target pH 5.0–5.5 is optimal for this system: within the skin-compatible range (4.5–6.0), compatible with the Phenoxyethanol + Ethylhexylglycerin preservation system (effective pH range 3.0–8.0), and produces good viscosity from the xanthan gum network. Cocamidopropyl Betaine viscosity contribution is also pH-sensitive — lower pH = higher viscosity.

4. **Centella Asiatica Extract at 1%.** Included for soothing and anti-inflammatory claims support. At 1%, this is a functional level — below 0.5% is generally considered sub-efficacious for Centella in rinse-off applications given the short skin contact time. Co-occurrence data shows Niacinamide + Centella is a high-growth pairing in the India brightening category.

5. **Viscosity and texture.** Target viscosity 2,000–4,000 cP via Xanthan Gum at 0.30%. This produces a light gel texture that dispenses well from a tube or pump. For higher viscosity (cream cleanser feel), increase Xanthan to 0.50% or add Hydroxyethylcellulose at 0.3–0.5%. For a foaming pump format (like Colonial's #2081), reduce total solids and omit Xanthan.

6. **Fragrance omission.** No fragrance included in this formulation. The brief specified brightening + gentle positioning — fragrance is the #1 cause of cosmetic contact dermatitis and contradicts a sensitive-skin positioning. If fragrance is required, add at Phase C below 40°C at 0.10–0.20% maximum.

Preservation Rationale

System selected: Phenoxyethanol (and) Ethylhexylglycerin at 0.90% total (typically 0.80% PE + 0.10% EHG).

Why this system: Phenoxyethanol is the most widely used standalone preservative globally. Ethylhexylglycerin acts as a co-emulsifier and booster — it enhances PE's efficacy against gram-negative bacteria, allowing a lower total PE concentration. The combination provides broad-spectrum activity against bacteria, yeast, and mould.

Spectrum coverage: Gram-positive bacteria (good), gram-negative bacteria (good with EHG boost), yeast (moderate — pH 5.0–5.5 helps), mould (moderate). For products with high botanical content or high water activity, consider supplementing with Sodium Benzoate at 0.2% for enhanced mould protection.

pH compatibility: Effective across pH 3.0–8.0. This formulation at pH 5.0–5.5 is within the optimal range.

Market compliance: EU — Phenoxyethanol restricted to max 1.0% under Annex V, Entry 29. This formulation at 0.90% is compliant with margin. India — permitted at 1.0% max. Japan — permitted but subject to category-specific limits; verify for specific product classification.

Alternatives considered: Sodium Benzoate + Potassium Sorbate (effective but pH-dependent — requires pH <5.5, limiting formulation flexibility). Benzisothiazolinone (effective but higher sensitization risk — not recommended for facial products). Organic acids only (insufficient for a water-rich surfactant system without hurdle technology).

Claims Substantiation — Quick Reference

Note: "Brightening" claim requires corneometry / chromametry data for EU claims regulation (EC 655/2013) compliance. If targeting Korea, "whitening" is a regulated MFDS functional cosmetic category requiring mandatory

clinical trial at a KFDA-recognized lab. Upgrade to Dossier for full per-claim, per-market testing protocols.