# Esaflor® ZERO-X Technology

## Sustainable cationic guars.

Clean beauty, sustainability and eco-conscious trends are reshaping beauty routines. Sensory appeal, efficacy and respect for the environment need now to be properly balanced. Bio-based cationic guar polymers can offer a valid, sustainable and multifunctional solution.

## Properties & benefits

ESAFLOR® are truly multipurpose ingredients:

- **Conditioning effect**. Their cationic charge can interact with keratin, leaving skin silky and soft, and hair easy to comb. They can also reduce the negative effects of harsh soaps and surfactants.
- **Foam boosting.** Foaming properties of surfactants can be increased, improving the sensory appeal of rinse-off products.
- **Thickening.** Viscosity of formulas can be enhanced thanks to guar polymeric nature.
- **Optimised actives delivery.** Delivery of water-insoluble ingredients onto hair and skin can be enhanced, with a co-deposition mechanism.

## Eco-sustainability: every drop counts

Natural guar gum is extracted from the inner part of *Cyamopsis tetragonoloba* (guar) seeds. The guar plant itself is an abundant, renewable, annual legume that requires very little rainwater. Further down the line, Lamberti developed ESAFLOR® ZERO-X Technology for the functionalisation of the natural gum: we minimise industrial water consumption, with a sustainable and water-saving process.

## Portfolio

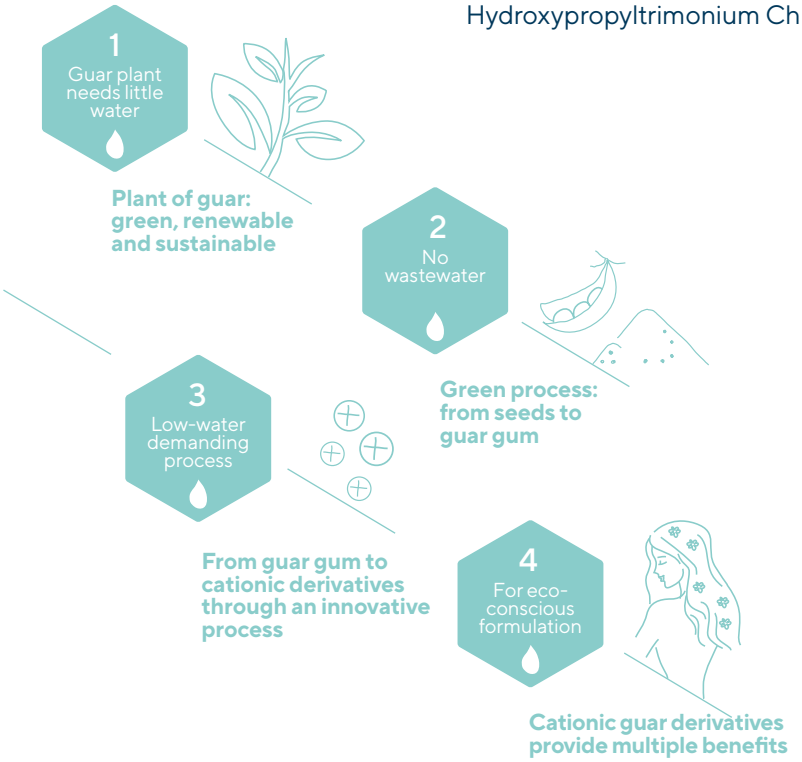
Leveraging our patented ESAFLOR® ZERO-X Technology, we offer a complete portfolio of eco-friendly and effective polymers:

- **ESAFLOR® LIGHT**
  moderate conditioning, suitable for fine hair and kids' products. It also enhances skin feel during application, with its foam boosting effect.
- **ESAFLOR® PLUS**
  high conditioning properties, coupled with thickening and superior foam boosting. It can grant superior deposition ability, with no build-up.
- **ESAFLOR® ZERO-XB**
  optimal conditioning and deposition of water-insoluble actives, being suitable for everyday-use shampoos. **ESAFLOR® ZERO-X** is the self-hydrating alternative.

## Applications

Appealing to consumers that are looking for clean beauty, ESAFLOR® cationic guar derivatives can deliver valuable benefits in shampoos and rinses, conditioners and hair treatments, as well as in shower gels, body washes and baby formulations.

**INCI name:** Guar Hydroxypropyltrimonium Chloride



## KIDS 2-in-1 SHAMPOO&WASH
LAMCOS 220

| Phase | Ingredient name | % w/w |
|---|---|---|
| **A** | | |
| 1 | Aqua (Water) | 20.0 |
| 2 | **ESAFLOR® LIGHT** | 0.5 |
| 3 | Citric Acid, 20% soln. | To pH ~ 5.5 |
| 4 | Sodium Cocoamphoacetate (~ 30% a.m.) | 11.8 |
| 5 | Lauryl Glucoside (~ 50% a.m.) | 12.0 |
| 6 | Glycol Distearate | 0.5 |
| 7 | **EUCAROL® AGL 35 MB** | 10.0 |
| 8 | **EUCAROL® AGE/EC MB** | 6.6 |
| 9 | Preservatives | q.s. |
| 10 | Parfum (Fragrance) | q.s. |
| 11 | CI 19140, CI 42090 | q.s. |
| 12 | Citric Acid, 20% soln. | To pH ~ 5.0 |

**General Characteristics:**

Appearance: light green, viscous liquid
pH: ~ 5.0
Viscosity (Brookfield RVT, 25°C, 20 rpm): ~ 1500 mPa*s

## NATURAL CONDITIONING SHAMPOO
LAMCOS 146

| Phase | Ingredient name | % w/w |
|---|---|---|
| **A** | | |
| 1 | Aqua (Water) | 20.0 |
| 2 | **ESAFLOR® ZERO-X** | 0.5 |
| **B** | | |
| 1 | Aqua (Water) | To 100 |
| 2 | Sodium Coco-Sulfate (~ 100% a.m.) | 5.0 |
| **C** | | |
| 1 | Glycerin | 4.0 |
| 2 | Glycerin, Aqua, Sodium Levulinate, Sodium Anisate | 3.5 |
| 3 | Sodium Phytate, Aqua, Alcohol | 0.1 |
| **D** | | |
| 1 | Coco-glucoside (~ 50% a.m.) | 8.0 |
| 2 | Lauryl Glucoside (~ 50% a.m.) | 6.0 |
| 3 | Aqua, Coco-Glucoside, Glyceryl Oleate, Citric Acid, Tocopherol, Hydrogenated Palm Glycerides Citrate | 1.0 |
| 4 | **EUCAROL® AGL 35 MB** | 4.2 |
| 5 | Parfum (Fragrance) | 0.5 |

**General Characteristics:**

Appearance: yellowish viscous liquid
pH: ~5-5.5
Viscosity (Brookfield RVT, 10 RPM, 25°C): 1500 – 6000 mPa*s

## INTENSE REPAIR CONDITIONER
LAMCOS 222

| Phase | Ingredient name | % w/w |
|---|---|---|
| **A** | | |
| 1 | Aqua (Water) | To 100 |
| 2 | **ESAFLOR® HM 22** | 0.1 |
| 3 | **ESAFLOR® PLUS** | 1.0 |
| 4 | Citric Acid, 20% soln. | To pH ~ 5.5 |
| **B** | | |
| 1 | Cetrimonium Chloride | 1.5 |
| 2 | Cetearyl Alcohol | 4.0 |
| 2 | Cocos Nucifera (Coconut) Oil | 1.0 |
| 3 | Theobroma Cacao (Cocoa) Seed Butter | 0.5 |
| **C** | | |
| 1 | Preservatives | q.s. |
| 2 | Parfum (Fragrance) | q.s. |
| 3 | Citric Acid, 20% soln. | To pH ~ 4.5 |

**General Characteristics:**

Appearance: white emulsion
Viscosity (Brookfield RVT, 25°C, 20 rpm): ~ 15000 mPa.s
pH: ~ 4.5

## Formulation tips

An **accurate dispersion** in water is important not only to guarantee the correct inclusion of cationic guar into formulations, but also to ensure better performances of the finished product. ESAFLOR® cationic derivatives are easy to formulate. They only need to be added into water under vigorous stirring at room temperature to be dispersed, avoiding lumps' formation. By adjusting **pH to 5.0-5.5** a rapid and full hydration of the polymer is obtained (20' stirring time is recommended). Moderate heating could reduce the hydration time.
ESAFLOR® ZERO-X is self-hydrating and does not require any pH adjustment.

**Recommended order of addition:** water, cationic guar, pH adjuster, amphoteric surfactants, non-ionic surfactants, anionic surfactants, other ingredients, salt, preservative, final pH adjuster.

**Typical use level:** 0.1 - 1 %
Guar gum and all its derivatives are not affected by salt addition and work in synergy with Sodium Chloride to build viscosity in surfactants system.

**For more information please contact:**

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