Esaflor®

Bio-based polymers for advanced Personal Care solutions

Formulation tips

An **accurate dispersion** is important not only to ensure the correct inclusion of guar into formulations, but also to deliver better performances of the finished product. Esaflor® guar 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, Esaflor® EC 4 and Esaflor® 4W are **self-hydrating** and don't 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 – 1.0 %

Non-ionic derivatives

Product	Properties			Performance		Application						Key features
	Degree of modification	Molecular weight	Dissolution	Suspending	Thickening	Shampoo	Conditioner	Body cleanser	Hydro-alcoholic sanitiser	Deodorant	Skin & Sun emulsion	
INCI name: Hydroxypropyl Guar												
Esaflor® 4W	Low	High	Self-hydrating		○○○	••	•	•••	•	•	•	Excellent thickening, especially in surfactant solutions. Good compatibility with electrolytes. Smooth skin feel.
Esaflor® HDR	High	High	Dispersible		○○○	•	•	•	•••	••	•	Thickener with optimal compatibility with polar solvents and ethanol. Ideal for hand sanitisers with a soft skin feel.
INCI name: C18-22 Hydroxyalkyl Hydroxypropyl Guar												
Esaflor® HM 22	Medium	High	Dispersible	○○	○○○	••	•••	••		•••	•••	Emulsification-aid for O/W emulsions, with excellent thickening and stabilising properties. Good compatibility with electrolytes. Smooth skin feel.

○ **low**
○○ **medium**
○○○ **high**

• **suitable**
•• **recommended**
••• **higly recommended**

Cationic derivatives

Product	Properties			Performance			Application					Key features
	Degree of modification	Molecular weight	Dissolution	Conditioning	Thickening	Delivery of water-insoluble ingredients	Shampoo	Conditioner	Body cleanser	Deodorant	Skin & Sun emulsion	
INCI name: Guar Hydroxypropyltrimonium Chloride												
Esaflor® Zero-X	Medium	High	Self-hydrating	○○	○○	○○	●●●	●	●●	●	●●	Optimal conditioning and deposition of water-insoluble actives. Suitable for everyday-use shampoos.
Esaflor® Zero-XB	Medium	High	Dispersible	○○	○○	○○	●●●	●	●●	●	●●	Optimal conditioning and deposition of water-insoluble actives. Suitable for everyday-use shampoos.
Esaflor® LIGHT	Medium	Low	Dispersible	○	○	○	●●●	●	●●●	●	●	Light conditioning, ideal for volumising and conditioning shampoos. Suitable for baby shampoos or thin hair.
Esaflor® PLUS	High	High	Dispersible	○○○	○○○	○○○	●●●	●●●	●●	●	●	Highest conditioning and deposition of water-insoluble actives. Suitable for thick, ethnic or damaged hair.
Esaflor® PURE	Medium	High	Self-hydrating	○○	○○	○○	●●●	●	●●	●	●	Developed for clear formulations. Moderate conditioning. Ideal for everyday-use shampoos.
Esaflor® EC 3	Medium	High	Dispersible	○○	○○	○○	●●●	●	●●	●	●●	Optimal conditioning and deposition of water-insoluble actives. Suitable for everyday-use shampoos.
Esaflor® EC 4	Medium	High	Self-hydrating	○○	○○	○○	●●●	●	●●	●	●●	Self-hydrating version of Esaflor® EC 3.
Esaflor® EC 5	Medium	Low	Dispersible	○	○	○	●●●	●	●●●	●	●	Light conditioning, ideal for volumising and conditioning shampoos. Suitable for baby shampoos or thin hair.
INCI name: Hydroxypropyl Guar Hydroxypropyltrimonium Chloride												
Esaflor® PFT	Medium	High	Dispersible	○	○	○	●●●	●	●●●		●	Developed for clear formulations. Light conditioning, ideal for volumising and conditioning shampoos. Improved hair brightness and mildness towards skin.
Esaflor® HC 56	Medium	Medium	Dispersible	○	○	○	●●●	●	●●●		●	Opaque version of Esaflor® PFT.

Lamberti personal care

Esaflor® ZERO-X Technology

Transparent formulations

○ low
○○ medium
○○○ high

● suitable
●● recommended
●●● higly recommended