
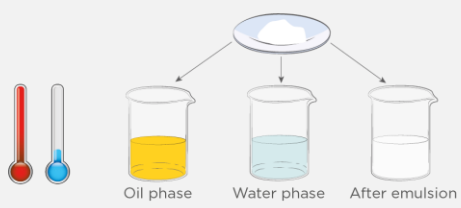


FORMULATION GUIDELINES

LECIGEL™

PRODUCT DESCRIPTION: Lecigel™ is a gelling agent of water phase. It can also emulsify an oil phase for the formulation of O/W gel-cream. Lecigel™ has a light and ultra-cool skin feel, with a quick break effect during application.

INCI name	Sodium Acrylates Copolymer (and) Lecithin
Appearance	Beige powder 
HLB value	Not applicable
Classification	Anionic gelling agent
Recommended dosage	<ul style="list-style-type: none"> • 0.1% - 2% • As stabilizer > 0.1% • As thickener > 0.5% • As emulsifier > 0.5% <p>2% of Lecigel™ alone can emulsify up to 20% of oil phase (1% for 10% and 0.5% for 7.5%).</p>
Recommended pH	<p>4.0 - 10.0 (optimum pH 4.0 - 8.0)</p> <p>Addition of electrolytes (adjusting the pH) leads to a decrease of the viscosity of Lecigel™ and can also impact its emulsifying properties.</p>
Process	 <ul style="list-style-type: none"> • A gel of Lecigel™ is well-developed when its surface is smooth and shiny, without any particles of powder. • Hot/cold, oil phase or water phase, end of the formula, direct or indirect process. • Aqueous gel: Sprinkle Lecigel™ in the water phase under stirring. The faster the stirring, the quicker the development of the gel. • Gel cream and emulsion: It can be added in the water phase, in the oil phase and also at the end of the formula (if Lecigel™ is not the only emulsifier). The emulsion can be made using a direct process (oil phase introduced in the water phase) or indirect process (water phase introduced in the oil phase).

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Additional properties

- Cooling effect
- Good dispersing and suspending properties (pigments, exfoliating particles, physical UV filters...)

Compatibilities

Oil phase	All types (esters, vegetable oils, mineral oils, silicones...)	
Natural gelling agents	<ul style="list-style-type: none">• Xanthan gum• Cellulose derivatives• Sclerotium gum	<ul style="list-style-type: none">• Pullulan• Locust bean gum
Surfactants	<ul style="list-style-type: none">• Non ionic• Polyquaternium-47	
Co-emulsifiers	<ul style="list-style-type: none">• Polyglycerol esters• Glycerol esters• Sucro-esters	
Preservatives and preservative boosters	<ul style="list-style-type: none">• Parabens• Chlorphenesin• Phenoxyethanol• Phenylpropanol• Propanediol	<ul style="list-style-type: none">• Caprylyl Glycol• Glyceryl Caprylate/Caprates• Pentylene Glycol
Chelating agents and antioxidants	<ul style="list-style-type: none">• Sodium Phytate (can decrease the viscosity)• EDTA (can decrease the viscosity)• Tocopherol	
Electrolytes	<ul style="list-style-type: none">• Quite sensitive to electrolytes Add gums such as xanthan gum, sclerotium gum or Siligel™ in presence of electrolytes.	
Ethanol	<ul style="list-style-type: none">• Up to 50% >30% ethanol, the viscosity drops, but the gel remains stable up to 50% of ethanol. Gel-creams: the addition of more than 30% of ethanol can impact the stability of the formula. Ethanol leads to the decrease of the formula's viscosity et can also impact its emulsifying properties.	
Pigments/pearls	<ul style="list-style-type: none">• Organic• Mineral	<ul style="list-style-type: none">• Pearls• Pigments/pearls

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	<p>UV filters (Tested)</p> <ul style="list-style-type: none">Chemicals: Ethylhexyl Methoxycinnamate, Methylene Bis-Benzotriazolyl Tetramethylbutylphenol, Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine, Butyl Methoxydibenzoylmethane, Octocrylene, Ethylhexyl SalicylatePhysicals: Titanium Dioxide, Zinc Oxide <p>Due to presence of acrylates, Lecigel™ presents limited compatibility with mineral UV filters. The phenomenon is linked to the charges at the surface of mineral filters. The compatibility can vary according to their coating, thus the stability should be evaluated case by case.</p>
Incompatibilities	<ul style="list-style-type: none">Caprylhydroxamic acid: significant odor change during agingCetrimonium chloride: formation of white lumps
Formulation tips & tricks	<ul style="list-style-type: none">In order to improve the final stability, it's preferable to introduce potentially destabilizing agents (such as electrolytes, ethanol...) after the gelling agent is fully developed.The % could be exceptionally increased if Lecigel™ is used at extreme pH or if there is the addition of destabilizing agents like electrolytes or alcohol. In this specific case, it will be mandatory to adapt the manufacturing process of Lecigel™ with an addition in two-step (before and after destabilizing ingredients).In case of oxidation of formula, addition of chelating agent and/or antioxidant is recommendedLecigel™ isn't shear sensitive, but use of high shear tools (rotor stator homogenizer) can be complicated when Lecigel™ is used at its maximum % of use, due to the very high viscosity.In order to optimize Lecigel™'s cooling effect at around 1.5%:<ul style="list-style-type: none">Select a quantity of Lecigel™ around 1.5%Limit glycols and glycerin to 10%Limit the amount of oil phase to 15%Limit as much as possible the quantity of fatty acids or fatty alcoholsButters or volatile oils do not affect the coolness effectLecigel™ is compatible with alcohol, menthol and menthyl lactate, it is technically possible to combine these cooling agents but the skin tolerance will be affected. Lecigel™ is able to emulsify menthol alone.
Textures & applications	<ul style="list-style-type: none">LotionsButtersCreamsOil in glycerin base