

# LAPONITE-XL 21 XR

## Synthetic Layered Silicate Thickener of Water Phases in Cosmetic Applications

### Product Data

#### INCI Name

Sodium Magnesium Fluorosilicate (nano)

#### Product Description

LAPONITE-XL 21 XR is a synthetic layered silicate and has been specially developed to give improved performance in personal care products formulated at pH 5.5 and lower. It is insoluble in water but hydrates and swells to give clear and colorless colloidal dispersions in water or aqueous solutions of alcohols. At concentrations of 2 % or greater in water, highly thixotropic gels are obtained. The unique shear thinning and thixotropic rheology of LAPONITE-XL 21 XR improves the skin feel of personal care products. Formulations will have a light, non-sticky texture. LAPONITE-XL 21 XR enhances stability of emulsions and keeps particles, pigments or solid actives suspended. LAPONITE-XL 21 XR has been sterilized by gamma irradiation.

#### Typical Properties

The values indicated in this data sheet are typical and do not constitute specification limits.

Appearance:	Free flowing, white powder
Loose Bulk Density:	900 kg/m <sup>3</sup>
pH Value (2 % dispersion in water):	9.0
Moisture:	max. 10.0 %
Sieve Analysis +250 µm:	max. 2 %
Gel Strength:	min. 22 g
Gel Time:	max. 6 min
Dispersion Rate:	max. 30
Clarity:	max. 60
Lead (as Pb):	max. 5 mg/kg
Arsenic (as As):	max. 1 mg/kg
Bacteria Count:	max. 10 cfu/g

#### Recommended Use

Used for imparting a shear sensitive structure to a wide range of personal care products.

Application areas:	Personal Care:	Cream and Lotion Sunscreen Product Depilatory Cream Toothpaste Bath and Shower Gel Anti-dandruff Shampoo
	Color Cosmetics:	Liquid Make-up Foundation Liquid Eyeliner

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Data Sheet  
Issue 07/2019  
Rev.03

### Incorporation and Processing Instructions

Recommended laboratory mixing equipment is a mechanical stirrer fitted with a propeller blade.

Add LAPONITE-XL 21 XR to deionized water (at 15 – 25 °C) in a steady stream over 10 - 30 seconds with rapid agitation. Mixer speed should be high enough to produce a vortex that will cause the stream of LAPONITE powder to wet out into the water without the formation of clumps. Mixing should be continued for up to 20 minutes. When dispersion is complete, LAPONITE-XL 21 XR produces a clear, colorless and low viscosity pre-mix.

Viscosity development will occur when the pre-mix is combined with other formulation components. Note that the viscosity of the LAPONITE-XL 21 XR pre-mix can be affected by temperature, electrolytes or pH level. Recommended agents are citric acid, lactic acid or sodium dihydrogen phosphate.

It can be difficult to disperse very strong gels of LAPONITE homogeneously into formulations without formation of gel-seeds. If there is not enough free water available to avoid this, the pre-gel may be “de-gelled” by addition of compounds such as tetrasodium pyrophosphate or low molecular weight glycols e.g. PEG or PPG. This de-gelling effect is overcome on addition of the pre-mix to a formulation.

### Recommended Levels

Use levels in a formulation are highly dependent upon the composition of the formulation and can range from 0.1% up to 3%. LAPONITE products are very commonly used in synergistic combinations with polymeric co-thickeners, including xanthan gum, CMC, HASE, etc. These combinations will often allow the formulator to reduce total thickener levels required to produce a stable product.

These levels are suggested as a guideline; optimum levels can be determined by laboratory tests.

### Special Note

LAPONITE-XL 21 XR is not compatible with cationic compounds. Recommended agents for pH adjustment to lower the pH are citric acid, lactic acid or sodium dihydrogen phosphate. To increase the formulation pH, sodium hydroxide can be used. LAPONITE-XL 21 XR is a weak base and can cause formulation pH to rise to >5.5 within 24 hours. This effect can be overcome by making the initial pH adjustment to a value below the target equilibrium pH level of the finished product.

LAPONITE-XL 21 XR is compatible with up to 40% ethanol solution. In synergistic combinations with co-thickeners, LAPONITE-XL 21 XR can be used in formulations containing >60% ethanol.

### Storage and Transportation

LAPONITE-XL 21 XR is hygroscopic and should be stored under dry conditions, in original packaging

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This issue replaces all previous versions – Printed in Germany