LAPONITE-RD

Rheology additive based on synthetic phyllosilicate for aqueous systems to improve the rheological properties in the low shear range.

Product data

Composition
Synthetic (modified) phyllosilicate

Typical properties
The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Bulk density:	1000 kg/m^3
pH value (2 % in H_2O):	10
Moisture content:	max. 10 %
Appearance:	free-flowing, white powder

Storage and transportation
LAPONITE-RD is hygroscopic and should be transported and stored dry in the unopened original container at temperatures between 0 °C and 30 °C.

Applications

Coatings industry

Special features and benefits
LAPONITE-RD can be used in aqueous coatings to increase viscosity in the low shear range with a small effect in the high shear range and prevent sagging or mixing of coatings in wet-on-wet applications. It improves workability and storage stability. It also very effectively prevents the settling of pigments, fillers, matting agents or other solids used in aqueous coating systems. LAPONITE-RD has a very broad range of applications and is effective in formulations from strongly acidic to strongly alkaline pH values. The additive also works excellently in systems containing higher concentrations of water-soluble organic solvents or dissolved salts. LAPONITE-RD can be used especially in aqueous automotive coatings to accelerate the structure build-up after application. This leads to an ideal effect pigment orientation. The resulting flow behavior of the basecoat ideally prevents sedimentation and syneresis and increases stability. The pH value does not have to be adjusted during incorporation. The high synergistic effect with organic rheological additives allows selective adjustment of rheological profiles.

Recommended use

Architectural coatings	■
Automotive OEM coatings	■
Automotive refinish coatings	■
General industrial coatings	■
Wood and furniture coatings	□

■ especially recommended □ recommended

Recommended levels

0.1–0.7 % additive (as supplied) based upon total formulation, if used in automotive coatings.
0.1–2 % additive (as supplied) based upon total formulation, depending on the properties of the formulation.

The above recommended levels can be used for orientation. The optimum dosage should be determined by application-related test series.

Incorporation and processing instructions

To ensure optimum dispersion and the best possible effectiveness and reproducibility in applications, LAPONITE-RD must be completely hydrated in water with a low ionic concentration (at 20 °C ± 5 °C). When using LAPONITE-RD, a 2 % dispersion in demineralized water is recommended. To achieve this, LAPONITE-RD is slowly added to the demineralized water with continuous stirring. The dispersion can be used as soon as it is clear, and no undissolved particles are visible. If an addition of up to 3 % is required, it is recommended to use glycols with low molecular weights as liquid medium. In this case, the proven ratio of one part polyethylene glycol to one part LAPONITE-RD is suitable. The use of glycols also improves the storage stability of the dispersion. The glycol should only be added when the dispersion is clear, and no undissolved particles are visible. In order to achieve an ideal flip-flop effect, a homogeneous distribution of the rheological additive is recommended before adding the effect pigment slurry.

Special Note

LAPONITE-RD dispersion should be used before visible viscosity formation occurs to ensure seed-free incorporation. At concentrations above 2%, gels with high viscosity form, making it difficult to incorporate them into a formulation. To counteract this effect, water-soluble organic solvents such as low molecular weight polyethylene glycols can be used.

Household, industrial and institutional applications

Special features and benefits

LAPONITE-RD is a rheology additive that produces a thixotropic flow behavior. It is used in aqueous systems and can be used universally as an anti-settling agent to prevent the settling of abrasives and other particles without excessive thickening. Cleaners with LAPONITE-RD are easy to use and can be applied by spraying. The use of the additive improves adhesion to vertical surfaces, whereby the cleaning effect is improved due to longer exposure time. LAPONITE-RD is particularly suitable for aqueous cleaners and care products in the pH range between 6 and 12.

Recommended use

Floor care products	□
Vehicle cleaners and care products	■
Cleaner for living spaces	■
Cleaner for the kitchen	■
Cleaner for wet rooms	■
Detergent	■

■ especially recommended □ recommended

Recommended levels
0.1–3 % additive (as supplied) on the total formulation, depending on the properties of the formulation.

The above recommended levels can be used for orientation. The optimum dosage should be determined by application-related test series.

Incorporation and processing instructions
LAPONITE-RD is hydrophilic and easy to work into water. In order to achieve an optimal distribution and the best effectiveness and reproducibility of the application, the additive must slowly be added to water (at 20 °C ± 5 °C) whilst stirring and pre-dispersed for at least 20 minutes. For optimum results, the concentration of LAPONITE-RD in this premix should not exceed 3 % by weight. It should be completely hydrated before the rest of the water and all other components of the formulation can be added to the dispersion. No wetting or dispersing additives are required to produce this dispersion.

Special Note
In addition to the rheological requirement profile, the physical properties (color, transparency, and the compatibility with the chemical environment of the respective wash and detergent, etc.) also determine the selection of the most suitable rheological additive.

Agricultural Industry

Special features and benefits
LAPONITE-RD is a rheology additive with an increased impact on viscosity in the low shear range. LAPONITE-RD is used as a universal gel-forming agent in the agricultural industry and can be combined with polymeric rheology additives.

Recommended use
LAPONITE-RD is particularly suitable for aqueous crop protection formulations in emulsions and emulsion concentrates as well as suspensions/suspension concentrates and water-dispersible granulates.

Recommended levels
0.05–1 % LAPONITE-RD (as supplied) based upon total formulation.

The above recommended levels can be used for orientation. The optimum dosage should be determined by application-related test series.

Incorporation and processing instructions
LAPONITE-RD is hydrophilic and easy to work into water. In order to achieve an optimal distribution and the best effectiveness and reproducibility of the application, the additive must slowly be added to water (at 20 °C ± 5 °C) whilst stirring and pre-dispersed for at least 20 minutes. For optimum results, the concentration of LAPONITE-RD in this premix should not exceed 3 % by weight. It should be completely hydrated before the rest of the water and all other components of the formulation can be added to the dispersion. No wetting or dispersing additives are required to produce this dispersion.

Adhesives and sealants

Special features and benefits
LAPONITE-RD increases viscosity in the low shear range with a low impact in the high shear range. It improves processability and storage stability. It is also highly effective in preventing settling of fillers, pigments, matting agents, or other solids used in aqueous adhesives and sealants. LAPONITE-RD is particularly effective in formulation with highly acidic or highly alkaline pH levels as well as in systems that contain higher levels of water-soluble organic solvents or dissolved salts.

Recommended levels
0.1–2 % additive (as supplied) based upon total formulation.

The above recommended levels can be used for orientation. The optimum dosage should be determined by application-related test series.

Incorporation and processing instructions
To ensure optimum distribution and the best possible effectiveness and reproducibility in applications, LAPONITE-RD must be fully hydrated in water with a low ion concentration (at 20 °C ± 5 °C). Therefore, LAPONITE-RD is gently added to water whilst stirring continuously and pre-dispersed for at least 20 minutes. The dispersion can be used as soon as it is clear and no undispersed particles are visible. In order to achieve the best processability, it is recommended to prepare a dispersion of LAPONITE-RD of up to 3 % solids content in water.

Energy storage

Special features and benefits
LAPONITE-RD is a rheological additive that achieves a high synergistic effect in combination with organic thickeners. This enables the production of water-based electrode slurries with high stability and leads to improved adhesion and mechanical strength of electrode coatings. In graphite anode slurries, the use of LAPONITE-RD can result in a significant increase in cycle stability.

Recommended use
LAPONITE-RD can be used in aqueous electrode coatings in combination with conventional organic binders, such as carboxymethyl cellulose (CMC), polyacrylic acid (PAA) and styrene-butadiene rubber (SBR).

Recommended levels
< 1 % additive (as supplied) based upon total formulation.

The above recommended levels can be used for orientation. The optimum dosage should be determined by application-related test series.

Incorporation and processing instructions
To ensure optimum distribution and the best possible effectiveness and reproducibility in applications, LAPONITE-RD must be fully hydrated in water with a low ion concentration (at 20 °C ± 5 °C). Therefore, LAPONITE-RD is gently added to water whilst stirring continuously and pre-dispersed for at least 20 minutes. The dispersion can be used as soon as it is clear and no undispersed particles are visible. All other formulation components should then be added to the LAPONITE-RD dispersion.

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