

# CLAYTONE-40

Rheology additive in powder form based on an organophilic phyllosilicate for non-polar to medium-polar systems to create a thixotropic flow behavior.

## Product Data

### Composition

Organophilic phyllosilicate

### Typical Properties

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

Bulk density: 400-600 kg/m<sup>3</sup>

Water content: max. 5 %

Specific weight: 1.6 g/cm<sup>3</sup>

### Food Contact Legal Status

For the current food contact legal status, please contact our product safety department or visit [www.byk.com](http://www.byk.com) for further information.

### Storage and Transportation

CLAYTONE-40 should be transported and stored dry in the unopened original container at temperatures between 0 °C (32 °F) and 30 °C (86 °F).

## Applications

### Coatings Industry

#### Special Features and Benefits

Due to its special organic modification, CLAYTONE-40 is ideally suited to influencing the flow behavior of non-polar to medium-polar coating systems. Using the additive creates thixotropic flow behavior, and therefore results in a significant improvement of the anti-sagging properties while at the same time maintaining good leveling. The storage stability is also improved, and the settling of pigments and fillers is prevented.

#### Recommended Use

Architectural coatings	■
Industrial coatings	■
Protective coatings	■
Wood and furniture coatings	■
Printing inks	■
Powder Coatings	■
Coil coatings	■

■ especially recommended    □ recommended

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### Recommended Levels

0.3-2 % additive (as supplied) based on the total formulation.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

### Incorporation and Processing Instructions

The additive is incorporated while stirring, and preferably dispersed in the millbase at high shear forces for at least 10 minutes. Alternatively, it can also be incorporated using a 10 % paste. The effect of CLAYTONE-40 can be increased by adding a booster or small quantities of a polar solvent or water.

## Powder Coatings

### Special Features and Benefits

CLAYTONE-40 is a rheology additive used to increase the melt viscosity in powder coatings. Even at low dosages, the viscosity of the melt during extrusion and during the cross-linking reaction is increased. The resulting coating produces a fine surface texture. At higher dosages, this also reduces the gloss level. Areas of application are fine structure systems in which CLAYTONE-40 can be used to modify the surface texture and improve the edge covering by increasing the viscosity.

### Recommended Use

The additive is recommended for powder coatings based on epoxy, polyester, polyurethane and acrylate resins as well as polyester/epoxy combinations.

### Recommended Levels

0.5-2 % additive (as supplied) based on the total formulation.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

### Incorporation and Processing Instructions

The additive should be mixed with the resin, hardener, pigments and other raw materials using a high-speed mixer and then extruded.

## Thermosets

### Special Features and Benefits

CLAYTONE-40 is a rheology additive in powder form based on a modified phyllosilicate. In putty compounds which are based on unsaturated polyester, CLAYTONE-40 develops a strong thixotropy, which results in an agreeable application consistency, and has a low propensity towards separation at the same time. Compared with commonly-used thixotropes, a smaller dosage can be applied.

### Recommended Use

Putties	■
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■ especially recommended    □ recommended

**Recommended Levels**

0.2-2 % additive (as supplied) based on the total formulation.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

**Incorporation and Processing Instructions**

CLAYTONE-40 can be incorporated directly into the resin, and should be dispersed together with the fillers at a high shear force.

**Detergents, Cleaning and Care Products****Special Features and Benefits**

CLAYTONE-40 is a rheology additive used to thicken solvent and oil systems. It is also used to stabilize water-in-oil emulsions. CLAYTONE-40 is optimized for use in low-polarity systems based on mineral oils, isoparaffins, spirits and silicone oils. It requires an activator for gelling. Polishes with CLAYTONE-40 are easy to apply, and any present abrasives do not settle.

**Recommended Use**

Furniture polishes	<input checked="" type="checkbox"/>
Car polishes	<input checked="" type="checkbox"/>
Industrial cleaners (non-polar)	<input type="checkbox"/>

especially recommended    recommended

**Recommended Levels**

0.5-3 % additive (as supplied) based on the total formulation, depending on the properties of the formulation to be achieved.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

**Incorporation and Processing Instructions**

To achieve the optimum effectiveness, CLAYTONE-40 requires both a high shear force as well as the addition of a polar activator during incorporation. CLAYTONE-40 is effective in a multitude of organic liquid systems and does not require a specific processing temperature. The additive can be dispersed using a high-speed mixer.

The following polar activators are recommended:

Propylene carbonate/H <sub>2</sub> O (95:5)	25-40 %, based on CLAYTONE-40
Ethanol/H <sub>2</sub> O (95:5)	40-60 %, based on CLAYTONE-40
Methanol/H <sub>2</sub> O (95:5)	25-40 %, based on CLAYTONE-40

CLAYTONE-40 can be incorporated either as a pregel or in situ.

Pregels can be produced as follows:

1. Place the organic solvent in the dispersion vessel
2. Slowly add the CLAYTONE-40 (10 % based on the pregel) while stirring
3. Stir for 15 minutes at high speed
4. Add the polar activator
5. Stir for 15 minutes at high speed

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It can be added in situ as follows:

1. Place the organic solvent or oil in the dispersion vessel
2. Slowly add the CLAYTONE-40 while stirring
3. Stir for 15 minutes at high speed
4. Add the polar activator
5. Stir for 15 minutes at high speed
6. Continue to add the other recipe components

Surfactants and emulsifiers may be added only after CLAYTONE-40 has been activated, otherwise the effect of the additive could be reduced or completely eliminated. When using emulsions, CLAYTONE-40 should be incorporated into the oil phase.

### Greases

#### Special Features and Benefits

CLAYTONE-40 can be used as a thickener in low- to medium-polarity mineral oils. The product requires an activator to be fully effective. CLAYTONE-40 swells in organic media and builds a gel structure (house of cards effect). Weak hydrogen bonds are the reasons for the thixotropic behavior. For optimum effectiveness, complete separation of the plates (complete dispersion of agglomerates into primary particles) is necessary.

#### Recommended Use

CLAYTONE-40 can be used as a thickener in low to medium polar mineral oils.

#### Recommended Levels

4-7 % additive (as supplied) based on the total formulation, depending on the desired NLGI classification of the grease.

#### Incorporation and Processing Instructions

The additive requires high shear forces for complete dispersion and separation of the mineral platelets. High-shear equipment such as a colloid mill should be used for processing.

CLAYTONE-40 requires the use of an activator, such as:

- Propylene carbonate or propylene carbonate/water (95/5)
- Methanol or methanol/water (95/5)
- Ethanol or ethanol/water (95/5)



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