CLAYTONE-40

Rheology additive in powder form based on an organophilic phyllosilicate for non-polar to medium-polar systems to generate 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.

Loose bulk density: 320–413 kg/m^3
Delivery form: powder

Storage and transportation
CLAYTONE-40 should be transported and stored dry in the unopened original container at temperatures between -50 °C and +50 °C.

Applications

Coatings industry

Special features and benefits
Due to its special organic modification, CLAYTONE-40 is ideally suited for influencing the flow behavior of non-polar to medium-polar coating systems. Using the additive produces thixotropic flow behavior, and therefore results in significant improvements to the anti-sagging properties while at the same time maintaining good leveling. This also optimizes storage stability, and prevents pigments and fillers from settling.

Recommended use

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

■ especially recommended □ recommended

Recommended levels
0.3–2 % additive (as supplied) based on the 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
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 that can be used to increase the melt viscosity in powder coatings. Even at low dosages, the melt viscosity during extrusion and during cross-linking reaction is increased. The resulting coating has a low surface structure. At higher dosages, this produces a fine texture and reduces the gloss value. CLAYTONE-40 can be used to modify the surface structure in fine textured systems. The increased melt viscosity improves edge covering. This results in better anti-corrosive properties.

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
0.5–4 % additive (as supplied) based on the 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
The additive should be mixed with 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 modified phyllosilicates and is mainly used in putty compounds and laminating resins based on unsaturated polyester resins. It prevents the settling of fillers. In a combination of CLAYTONE-40 with booster additives, such as RHEOBYK-R 605, the dosage can be lower or the properties can be enhanced compared with commonly used thixotropes. Thanks to the modification, CLAYTONE-40 exhibits a stable rheology profile even at higher temperatures.

Recommended levels
0.2–2 % additive (as supplied) based on the 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
CLAYTONE-40 can be incorporated directly into the resin. It is recommended to disperse CLAYTONE-40 at a high shear force. The chosen dispersion time can be shorter compared to other thixotropes. Fillers can increase the shear and improve the incorporation of the phyllosilicate. Alternatively, to achieve full effectiveness in UP resins (dosages 0.5–2 %), a pre-gel can be prepared in styrene. For this purpose, 4–6 % CLAYTONE-40 must be incorporated into styrene. At this concentration, the mixture can still be pumped, will flow and can be later dosed to the resin easyly. The use of air release additive in such resins is advisable to reduce the quantity of air bubbles.

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-polar 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	■
Car polishes	■
Industrial cleaners (non-polar)	□

■ 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. The optimum dosage should be determined by application-related test series.

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_2O (95:5) 25–40 %, based on CLAYTONE-40
- Ethanol/H_2O (95:5) 40–60 %, based on CLAYTONE-40
- Methanol/H_2O (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

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 and lubricants

Special features and benefits

CLAYTONE-40 is a thickener for low- to medium-polar base oils in greases and lubricants

Greases with CLAYTONE-40 exhibit highly constant thickening before and after stress as well as a low level of oil separation. Especially for greases with high usage temperatures, CLAYTONE-40 is preferred due to the fact that the greases do not have a drop point and the thickening effect is retained at high temperatures.

In lubricants, CLAYTONE-40 is used to create a thixotropic flow behavior in the base oils. This allows dry lubricants, such as graphite and PTFE, to stabilize and prevents sedimentation. In corrosion protection oils, CLAYTONE-40 is used to adjust the anti-sagging property of the oil.

The high level of purification during the manufacturing process of CLAYTONE-40 results in a low level of abrasive accompanying minerals, which leads to good friction values with low abrasion, especially in lubricant applications.

Recommended use

CLAYTONE-40 is used as a thickener in low- to medium-polar base oils.

Mineral oils (API group I to III)	■
Polyalphaolefins	■
White oils	■
Naphthenic oils	■
Ester oils	□
Vegetable oils	□

■ especially recommended □ recommended

Recommended levels

For NLGI class 2:
6–8 % additive (as supplied) based on the total formulation, in mineral oils and naphthenic oils.
8–12 % additive (as supplied) based on the total formulation for polyalphaolefins, ester oils, and vegetable oils.

In lubricant applications:
1–4 % additive (as supplied) based on the 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 achieve the optimum effectiveness, CLAYTONE-40 requires both a high shear force as well as the addition of a polar activator during incorporation.

The following steps in the manufacture of greases are recommended:
Incorporation of CLAYTONE-40 into the base oil using a mixer or dissolver, addition of the polar activator (mixer or dissolver), dispersion by means of a colloid mill or homogenizer.

As polar activator for CLAYTONE-40, we recommend e.g.:

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

20 % activator based on the CLAYTONE-40, has been found to be a good initial dosage.

Download on the App Store
GET IT ON Google Play

Your local contact

BYK-Chemie GmbH
Abelstraße 45
46483 Wesel
Germany
Tel +49 281 670-0
Fax +49 281 65735

info@byk.com
www.byk.com

ADD-MAX®, ADD-VANCE®, ANTI-TERRA®, AQUACER®, AQUAMAT®, AQUATIX®, BENTOLITE®, BYK®, BYK-AQUAGEL®, BYK®-DYNWET®, BYK-MAX®, BYK®-SILCLEAN®, BYKANOL®, BYKCARE®, BYKETOL®, BYKJET®, BYKO2BLOCK®, BYKONITE®, BYKOPLAST®, BYKUMEN®, CARBOBYK®, CERACOL®, CERAFAK®, CERAFLOUR®, CERAMAT®, CERATIX®, CLAYTONE®, CLOISITE®, DISPERBYK®, DISPERPLAST®, FULACOLOR®, FULCAT®, GARAMITE®, GELWHITE®, HORDAMER®, LACTIMON®, LAPONITE®, MINERPOL®, NANOBYK®, OPTIBENT®, OPTIFLO®, OPTIGEL®, POLYAD®, PRIEX®, PURABYK®, PURE THIX®, RECYCLOBLEND®, RECYCLOBYK®, RECYCLOSSORB®, RECYCLOSTAB®, RHEOBYK®, RHEOCIN®, RHEOTIX®, SCONA®, SILBYK®, TIXOGEL® and VISCOBYK® **are registered trademarks of the BYK group.**

The information herein is based on our present knowledge and experience. The information merely describes the properties of our products but no guarantee of properties in the legal sense shall be implied. We recommend testing our products as to their suitability for your envisaged purpose prior to use. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding any products mentioned herein and data or information set forth, or that such products, data or information may be used without infringing intellectual property rights of third parties. We reserve the right to make any changes according to technological progress or further developments.

This issue replaces all previous versions.