

RHEOCIN

PAINT & COATINGS APPLICATIONS

Product Data

Special Features and Benefits

RHEOCIN is a processed castor oil derivative that are use for rheological modification of non-aqueous systems.

Recommended Use

RHEOCIN is a thixothrope for aliphatic systems.

- Trade sales alkyds
- Industrial alkyds
- Stains
- Other aliphatic coating systems

RHEOCIN is particularly well suited for use in powder coating formulations. Its' inherent characteristics, including compatibility with a broad range of resin types, can provide various benefits. The benefits that can be realized include:

- Enhanced flow and leveling during the baking cycle
- Improved dry flow properties which result in easier compounding
- Good optical clarity
- Better organic pigment wetting characteristics

RHEOCIN can improve the flow and leveling of a powder coating during the baking process. This is believed to occur in two ways. Firstly, RHEOCIN has a low melting point (~86 °C).

As a powder coated item enters the baking stage, the low melt point provides early softening and liquidity which would promote better flow. Secondly, RHEOCIN has sufficient polarity to solvate the resin to the extent that the free volume is increased, thereby depressing the coating's melt viscosity. This effect would also contribute to better flow and leveling of the powder coating. This results in better uniformity of film thickness, improved edge coverage, higher gloss, and greater reflected distinctiveness of image (D.O.I.). It is important to note that RHEOCIN is not an alternative to flow additives that are based on polyacrylate chemistry. The latter serve as flow modifiers that address crater defects which are a result of surface tension induced wetting problems. RHEOCIN may be used in conjunction with these products. Due to its' excellent compatibility and optical clarity, RHEOCIN is especially well adapted for use in clear powder coatings. RHEOCIN can act as a processing aid. In the dry state during compounding, the natural lubricity of RHEOCIN enhances the mixing of the powder coating components. This serves to improve the powder coating manufacturing process and results in a more consistent, reproducible powder. The chemical composition of RHEOCIN has the intrinsic ability to provide good wetting and dispersion properties with regard to organic pigments. As a consequence of this pigment wetting/dispersant characteristic, RHEOCIN can result in the more efficient use of organic colors, thereby reducing raw material costs.

Composition

RHEOCIN

Castor oil derivative

Typical Properties

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

Physical Form Density:	White powder 8.5 lbs/U.S. gal (1.02 g/cm ³)
Bulking Value:	0.118 U.S. gal./lb.
Particle Size (Dry):	100 % < 48 μm
Incorporation Temperature:	95-130 °F (35-55 °C) Aliphatic Systems Only

Incorporation and Processing Instructions

All castor based thixotropes are highly solvent/temperature sensitive. RHEOCIN is no exception. Care must always be exercised to strictly adhere to operating temperature constraints and solvent restrictions. RHEOCIN should be added at the beginning of the batch, preferably by mixing with the vehicle prior to the addition of pigments. This premixing is designed to disperse the RHEOCIN particles prior to the swelling of those particles when the batch reaches operating temperature.

Hexane, heptane, VM&P naphtha, mineral spirits, and 140 solvent are examples of solvents suitable for RHEOCIN.

RHEOCIN should not be added to batches already at operating temperature as swelling and agglomeration of the RHEOCIN particles may occur before those particles can be dispersed. In order to fully activate the RHEOCIN, the grind phase should be brought to a temperature between 95 °F (35 °C) and 130 °F (55 °C). The middle of the range is preferred. Note that the temperature readings in the center of the batch, near the disperser blade, may be quite higher than temperature readings taken at the top of the tank. The highest temperature in the batch must not exceed 130 °F (55 °C). If the maximum activation temperature is exceeded, soft seeds will appear in the paint upon cooling to room temperature. Caution: This "seeding" may also occur if finished paint is stored in a manner that allows the paint to reach 130 °F during storage. This is a distinct possibility in the South and West during summer months. If the maximum activation temperature is exceeded, seeding may be avoided by agitating the batch during cool-down to below 100 °F (38°C). Once seeding has occurred, a batch may be reworked by bringing the batch up to activation temperature, 95 °F-130 °F, and applying intensive shear. Sand milling or ball milling may be required.

Always avoid shocking systems containing RHEOCIN.

Examples of things to avoid are:

1. Adding cold let-down solvent to a hot grind paste.
2. Packaging hot batches in gallon cans and storing in a cold warehouse.
3. Any processing situation that could potentially subject the batch to sudden temperature changes.
4. Storage at temperature above recommended maximum manufacturing ranges.

Batches should always be agitated during cool-down to avoid the formation of "false body". "False body" is a structure that is easily broken by shearing and will not recover. It can be responsible for erroneous viscosity readings. RHEOCIN is only recommended for aliphatic solvent systems. As the KB Value of the system increases, the operating temperature range narrows and the minimum and maximum temperatures become lower.

Recommended Levels

RHEOCIN is typically used at levels of 3 to 12 pounds per hundred gallons, 0.2 % to 0.8 % by weight of the total formulation.

RHEOCIN should be added during the initial stages of compounding the powder coating. Suggested usage levels for optimum performance range from 0.5 to 2.0 %.

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

Storage and Transportation

Shelf life is infinite under normal storage conditions.

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