

Preliminary Data Sheet
K-SPERSE® A504
Polymeric Pigment Dispersion



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K-SPERSE A504 is a 100% active polymeric dispersant designed for use in 100% solids formulations including coatings, inks, pigment concentrates and plastics.

ADVANTAGES:

- Lower pigment paste viscosity and high pigment loading
- Excellent color development and high gloss
- Better clarity of transparent pigments
- Improved jetness and viscosity stability of carbon black dispersions
- Little or no effect on the cure of amino resins or isocyanates
- Compatible with a wide variety of resin systems
- No heat is necessary to dissolve it in polyacrylate UV formulations
- No interference in free radical UV systems

| | | |
|----------------------------|-------------------------------|--|
| TYPICAL PROPERTIES: | Appearance | Clear to slightly hazy, viscous liquid |
| | % nonvolatile | 99 |
| | Gardner Color | 9 |
| | Acid # | 28 |
| | ICI Viscosity, poise at 75 °C | 22 |
| | Specific gravity, 25°C | 1.0 |

SOLUBILITY: Soluble in acrylates, ketones, esters, ethers, aromatic hydrocarbons and butanol. Partially soluble in aliphatic hydrocarbons, isopropanol, and ethanol. Insoluble in water.

APPLICATIONS: K-SPERSE A504 is recommended for organic and inorganic pigments in a wide variety of resins, including; acrylates, alkyds, acrylics, polyesters, polyurethanes and aldehydes. It is especially effective for pigments with high surface areas, such as high color carbon blacks, phthalocyanine blue, quinacridone and perylene reds.

TYPICAL USAGE LEVELS:

For high color carbon black:
Weight % dispersant on pigment weight = pigment surface area(m²/g) x 0.14
For other pigments:
Weight % dispersant on pigment weight = pigment surface area(m²/g) x 0.33
It is strongly recommended that a ladder study be run, since the optimum level of dispersant depends on the type of pigment, resin and solvent used in each specific formulation.

INCORPORATION: K-SPERSE A504 should be dissolved in the mill base prior to pigment addition.

SHELF LIFE: 24 months from the date of manufacture, when stored at ambient conditions in the original container.

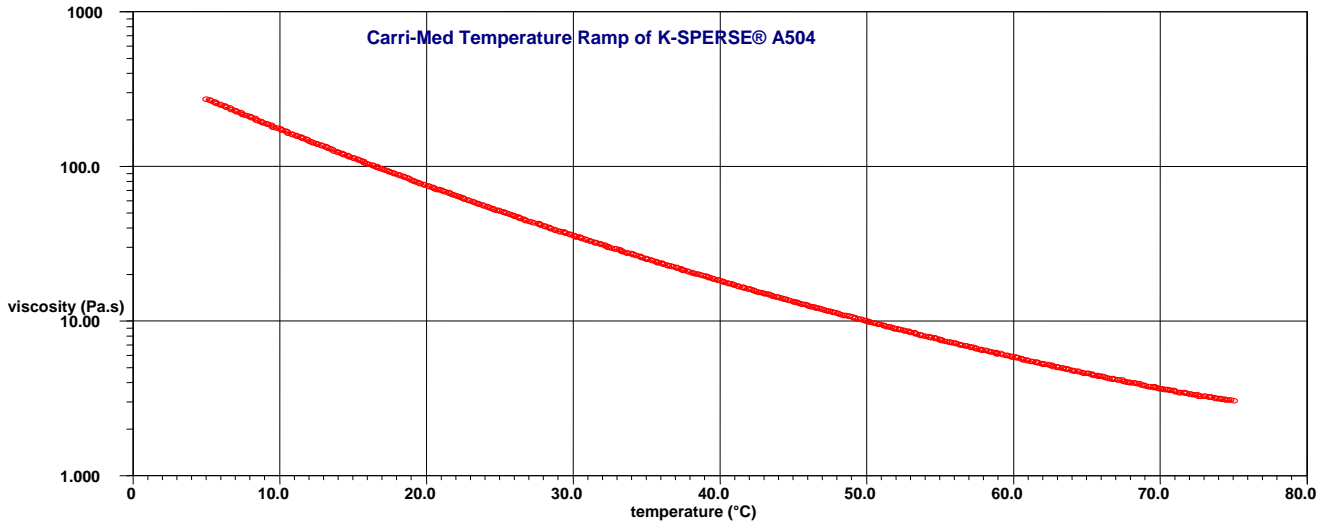
HANDLING & STORAGE: Safe handling of this product should include the use of safety glasses and gloves. Refer to MSDS for detailed information. This product may be heated up to 60 °C for easy handling. Avoid long periods of air exposure at elevated temperature as the product may darken.

REGULATORY: Please refer to Section 15 of the Safety Data Sheet for information.

Application tips

1) Viscosity of K-SPERSE A504 vs. temperature

This product by itself has a Newtonian behavior. Figure 1 shows its viscosity curve vs. temperature.



2) Stability of K-SPERSE A504 in acrylates

A 20% solution of K-SPERSE A504 in propoxylated neopentyl glycol diacrylate (Sartomer SR 9003) was made via moderate agitation at room temperature. The solution remains clear after 4 weeks storage at 5 °C.

3) Dispersion example of K-SPERSE A504 for UV cure

Table 1. Carbon black dispersion with A504. 120 min dispersing on a shaker with ¼ inch steel beads.

| Material | Parts by weight |
|---|-----------------|
| K-SPERSE A504 | 9.0 |
| Sartomer SR 9003 | 81.0 |
| Monarch 1300 | 10.0 |
| Total | 100.0 |
| Brookfield viscosity at 25 °C after particle size reduction to less than 5 µm on Hegman gauge | |
| At 10 rpm | 252 cps |
| At 100 rpm | 226 cps |

Sartomer SR 9003, a propoxylated neopentyl glycol diacrylate from Sartomer Company, West Chester, PA.

Monarch 1300, a high color carbon black pigment with surface area of 560 m²/g from Cabot Corp., Billerica, MA.