

VINNOL® 4500, 4514, & 4530 Ethylene-Vinyl Chloride (EVCL) Dispersions

Description

VINNOL ethylene-vinyl chloride (EVCL) polymer dispersions are suitable for use in a variety of specialty coatings applications. Their unusual combination of tailored flexibility, alkali and abrasion resistance, vapor barrier properties and fire resistance makes them beneficial in formulations ranging from mastics to industrial baked coatings.

VINNOL EVCL polymer dispersions are fine particle- size emulsion products with excellent pigment- binding powers. Because of their vinyl chloride content, these products have superior wet- and dry- abrasion resistance vs conventional emulsion polymers. In addition, their films are more hydrophobic and possess excellent alkali resistance.

VINNOL EVCL dispersions range in glass transition temperature (T_g) from approximately 0 °C to +30 °C. The low T_g products have good low-temperature fusion characteristics, and films are soft yet tough and flexible. The hardest emulsion (VINNOL 4530) is a non-film former at room temperature, requiring heat or the addition of a plasticizer or fugitive coalescing solvent for good film consolidation. Dried films of VINNOL 4530 polymer are hard, tough and the most block-resistant of the EVCL products.

Compounding

VINNOL EVCL polymer dispersions are easy to formulate and compound readily with the same plasticizers, coalescing agents and solvents commonly used with vinyl acetate and acrylic systems. These dispersions are low-viscosity products; however, due to their fine particle size, they maintain stability on dilution, enabling them to be used as low-viscosity, low-solids saturants or sealers.

Typical Properties (Table I)

	VINNOL 4500	VINNOL 4514	VINNOL 4530
Copolymer Type	Ethylene- Vinyl Chloride	Ethylene- Vinyl Chloride	Ethylene- Vinyl Chloride
Solids ¹ %	50	50	50
Viscosity, ² cPs	25–150	25–150	25–150
pH	7–9	7–9	7–9
Average Particle Size, microns	0.12	0.12	0.11
Surfactant Type	Anionic	Anionic	Anionic
Weight, lbs/gal	9.2	9.2	9.4
Mechanical Stability ³	Excellent	Excellent	Excellent
MFFT, °C	4	14	34
MVTR, g/m ² /24 hrs	0.13	0.17	N/A
pH Stability ⁴	Excellent	Excellent	Excellent
Functionality	Amide	Amide	Amide

¹ Cenco Moisture Balance

² Brookfield Viscometer, Model LVF (Spindle #2, 60 rpm, 77 °F)

³ Passes 30 min. in a Waring blender at high speed

⁴ If adjusted with dilute acids or alkalis

N/A (Not Applicable)

VINNOL 4500 Emulsion Polymer

VINNOL 4500, an aqueous ethylene-vinyl chloride copolymer dispersion, can be used in applications requiring good flexibility and water or alkali resistance. VINNOL 4500 emulsion polymer, having a higher vinyl chloride content than VINNOL 728,* has a lower moisture vapor transmission rate (MVTR) and also better nonflammability characteristics. Possible applications for VINNOL 4500 emulsion polymer include roof coatings, mastics and cellulosic insulations.

* For information on VINNOL 728, please request a separate data sheet by using one of the phone numbers below.

VINNOL 4514/4530 Emulsion

Films or coatings made from VINNOL 4514 and 4530 polymer dispersions achieve a maximum of physical toughness among the EVCL products. This results in superior tensile strength, water and grease resistance and abrasion resistance. Fire retardance, with and without other fire-retardant additives, is also the best for these products, due to their higher vinyl chloride content. VINNOL 4514 and 4530 emulsion polymers can also be used in high pigment volume concentration (PVC) paint formulations for intermediate coats and topcoats for ceiling tile and board coatings, where they exhibit excellent abrasion resistance and pigment-binding power.

Typical Film Properties (Table II)

	VINNOL 4500	VINNOL 4514	VINNOL 4530
Flexibility	Excellent	Good	Fair
Tensile Strength, psi	600	1,100	2,100
Elongation, %	1,700	675	140
Reactivity	Crosslinkable	Crosslinkable	Crosslinkable
Water Resistance	Good	Good	Excellent
Oil Resistance	Excellent	Excellent	Excellent
T _g , ¹ °C	3	12	29

¹ Differential thermal analysis

Storage

When VINNOL® EVCL dispersion is stored in tanks, proper storage conditions must be maintained. If stored in the original, unopened containers at cool (below 30 °C), but frost-free temperatures VINNOL® EVCL dispersion has a shelf life of 6 months. Iron or galvanized-iron equipment and containers are not recommended because the dispersion is slightly acidic. Corrosion may result in discoloration of the dispersion or its blends when further processed. Therefore the use of containers and equipment made of ceramics, rubberized or enameled materials, appropriately finished stainless steel, or plastic (e.g. rigid PVC, polyethylene or polyester resin) is recommended

Preservation for Transport, Storage and further Processing

VINNOL® EVCL dispersion is adequately preserved during transportation and storage if kept in the original, unopened containers. However, if it is transferred to storage tanks, the dispersion should be protected against microbial attack by adding a suitable preservative package.

To maintain proper storage conditions appropriate measures should also be taken to ensure cleanliness of the tanks and piping. In a storage tank in which VINNOL® EVCL dispersion is not stirred, it is advisable to contact your biocide representative/supplier. Proper procedures must be set up in order to prevent microbial attack between necessary periodic tank cleaning and sanitization. These procedures will vary, since loading and unloading practices in each storage situation will differ slightly.

Finished products manufactured from polymer dispersions usually also require preservation. The type and scope of preservation will depend on the raw materials used and the anticipated sources of contamination. The compatibility with other components and the efficacy of the preservative should always be tested in the respective formulation. Preservative manufacturers will be able to advise you about the type and dosage of preservative required.

Additional Information

If VINNOL® EVCL dispersion is used in applications other than those mentioned, the choice, processing and use of VINNOL® EVCL dispersion is the sole responsibility of the purchaser. All legal and other regulations must be complied with. For questions concerning food contact status according to chapter 21 CFR (US FDA) and German BfR, please contact:

Wacker Chemie AG
Hanns-Seidel-Platz 4
D-81737 Munich
Germany

Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER sales offices or may be printed via WACKER web site www.wacker.com/vinnapas.