

# VINNAPAS® 400



## Polymer Dispersions

VINNAPAS® 400 is a poly(vinyl alcohol) stabilized vinyl acetate-ethylene (VAE) copolymer dispersion with a glass transition temperature ( $T_g$ ) of 0°C. It was developed as a high-performance dispersion offering a superior balance of adhesive/cohesive properties useful in an extremely wide variety of applications.

## Properties

VINNAPAS® 400 is used as a base for adhesives and offers a superior balance of adhesive/cohesive properties. It exhibits excellent setting speed, wet tack, and high thickening response. It has clean machining and is suitable for a variety of roll, extruder or spray applications because of its poly(vinyl alcohol) stabilization. The dry film is tack-free and heat-sealable. The backbone of the polymer gives the dried adhesive film both high tensile strength and flexibility that continue to be present even with fluctuations in temperature and humidity. VINNAPAS® 400 has excellent heat resistance which, at elevated temperatures, is much greater than that exhibited by other vinyl acetate-ethylene, vinyl acetate-maleate and vinyl acetate-acrylate copolymers with similar glass transition temperatures. The initial adhesive strength is excellent even after aging, and it exhibits excellent resistance to plasticizer migration.

## Specific features

- Produced without APEO

## Technical data

### Specification

Property	Condition	Value	Method
Solids content	-	54.0 - 56.0 %	specific method
Viscosity, dynamic	25 °C	1800 - 2700 mPa·s	specific method
pH	-	4.0 - 5.0	specific method
Grit 100 Mesh	-	max. 50 ppm	specific method

### General Characteristics

Property	Condition	Value	Method
Density	-	1.05 g/cm <sup>3</sup>	specific method
Frost resistance	-	protect from freezing	specific method
Protective colloid / emulsifier system	-	polyvinyl alcohol	-
Glass transition temperature	-	approx. 0 °C	DSC, specific method
Dry tack	-	none	specific method
Film clarity	-	slightly hazy	specific method
Flexibility	-	good	specific method
Mechanical stability	-	excellent	specific method
Thickening response	-	high	specific method
Water resistance	-	moderate	specific method
Wet tack	-	high	specific method

These figures are only intended as a guide and should not be used in preparing specifications.

All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

Protect against frost.

## Applications

- Ductliner Adhesives
- Film & Foil Converting

- Film-to-Wood lamination
- Paper Packaging & Converting
- Water-Based Caulks

## Application details

VINNAPAS® 400 is compatible with other poly(vinyl alcohol) and surfactant stabilized vinyl acetate-based dispersions and acrylic copolymers. It is also compatible with rubber lattices, water based urethane dispersions, solvents, plasticizers and other modifiers. VINNAPAS® 400 thickens rapidly to high viscosities with the addition of plasticizers and/ or solvents. The addition of plasticizers to VINNAPAS® 400 will improve the specific adhesion, water resistance and setting speed. Additionally, the adhesive dispersion accepts high loadings of dry fillers. VINNAPAS® 400 can be further crosslinked through the hydroxyl functionality of the poly(vinyl alcohol) with materials such as glyoxal, boric acid, and isocyanates.

VINNAPAS® 400 is an excellent base for adhesive formulators and can be used in an extremely wide variety of applications. The ethylene in the polymer acts as an internal plasticizer which provides flexibility and reduces or eliminates the need for plasticizer in many applications. Because of its flexibility and excellent adhesion to so many substrates, VINNAPAS® 400 is a versatile base in adhesives for application areas which include but are not limited to packaging (case and carton,) converting, bookbinding, textile bonding, vinyl and paper to wood laminating, automotive applications, and craft glues. It forms strong bonds between porous substrates and such films as poly(vinyl chloride) (PVC), poly(vinylidene chloride), cellulose acetate, cellophane and acrylic. VINNAPAS® 400 adheres to widely diversified substrates such as paper, wood, cotton cloth, nylon cloth, glass and glass fibers, hardboard, urethane foam and clay coated paperboard.

## Packaging and storage

### Storage

When the 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 the product has a shelf life of 9 months from the date of manufacture. Any longer periods for the maximum storage period that may be described in the Certificate of Analysis which accompanies each shipment of the product, take preference over this suggestion in which case the time period stated in the Certificate of Analysis shall be solely authoritative. 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. As polymer dispersions may tend to superficial film formation, skins or lumps may form during storage or transportation. Filtration is therefore recommended prior to utilization of the product.

### Preservation for Transport, Storage and further Processing

The product 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 pipes. In a storage tank in which the product 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.

## Safety notes

Comprehensive instructions are given in the corresponding Safety Data Sheets. These are available on request from WACKER sales offices or may be downloaded from the WACKER Web site [www.wacker.com/vinnapas](http://www.wacker.com/vinnapas).

## QR Code VINNAPAS® 400



**For technical, quality or product safety questions, please contact:**

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